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• Brass and Copper Issue •

POURING A HEAT, the first step in the manufacture of more than 100,000 products from brass and copper and other related non-ferrous alloys.

CONNECTICUT
INDUSTRY . JULY .
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Winners All!

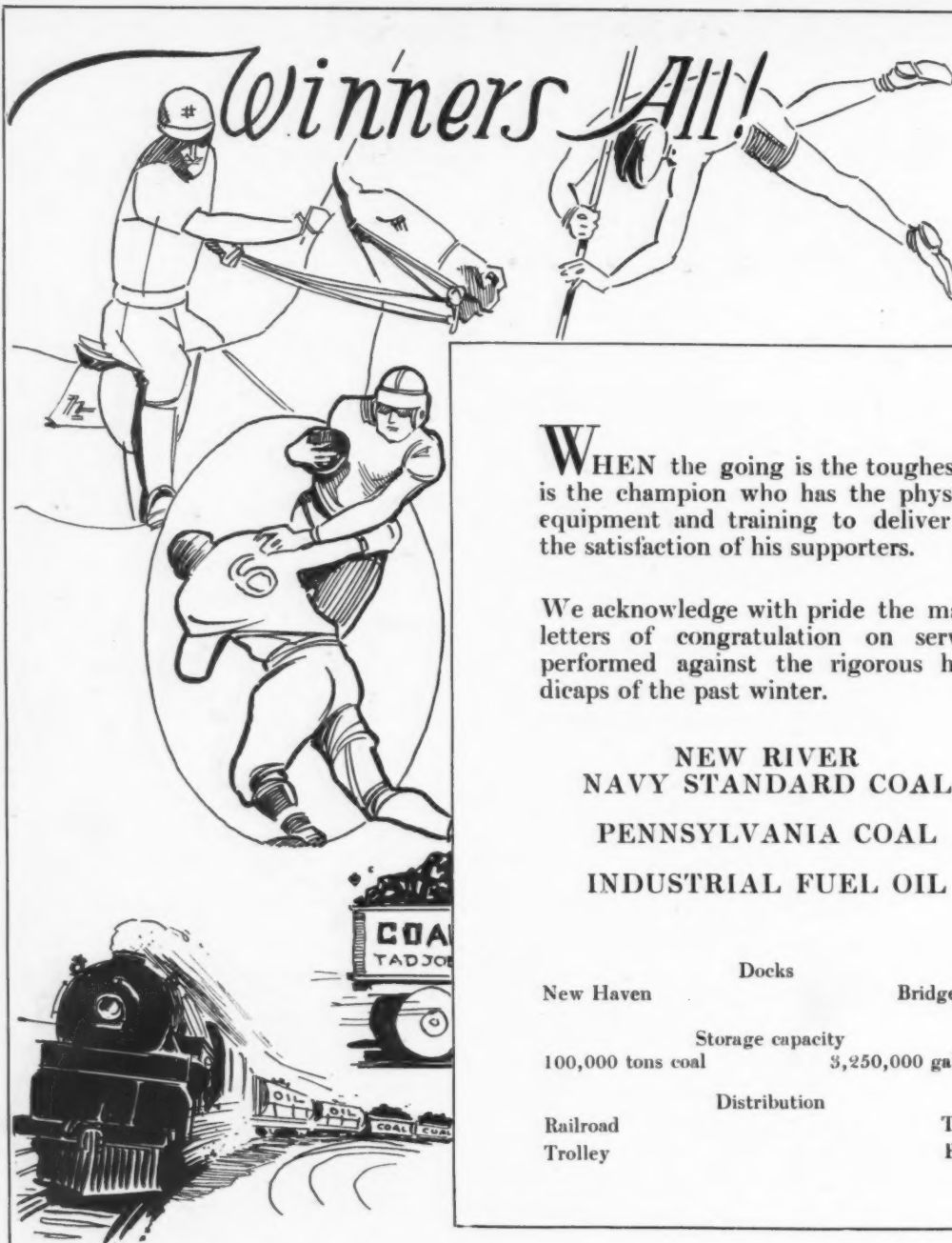
WHEN the going is the toughest it is the champion who has the physical equipment and training to deliver to the satisfaction of his supporters.

We acknowledge with pride the many letters of congratulation on service performed against the rigorous handicaps of the past winter.

**NEW RIVER
NAVY STANDARD COAL
PENNSYLVANIA COAL
INDUSTRIAL FUEL OIL**

New Haven	Docks	Bridgeport
	Storage capacity	
100,000 tons coal		3,250,000 gal. oil
	Distribution	
Railroad		Truck
Trolley		Barge

T. A. D. JONES & CO., Inc.



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	Distribution	
Railroad		Truck
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ECONOMY FOR THE OTHER FELLOW

A year or two ago, as a result of loud demands for retrenchment in the federal government, a congressional committee did a workmanlike job of investigating possible economies. One of their recommendations was that certain inland customs houses be abandoned. Speaking through its civic association, one Connecticut community that would have been affected by this proposal immediately deposited an unmistakable protest with its representative in Congress. The customs house is still there and that part of the economy program never materialized.

Another recommendation of the committee was to consolidate two bureaus within the federal government, both of which had certain inspection authority over a mechanism used in the transportation of passengers and freight. A manufacturer of that mechanism, who was satisfied with the fairness of the old bureau, came to the conclusion, rightly or wrongly, that the merger would put this inspection job into hands that were not so capable professionally, and might thereby let his competitors' products by with unwarranted ease. He protested. The proposed merger was abandoned.

A few years ago one of our Connecticut municipalities contemplated a downtown street extension project which would necessarily involve awarding substantial damages to the property owners on the proposed right-of-way. A few citizens demurred, but the civic organizations of the community pushed the project as a civil improvement, with a resulting increased tax burden to the community as a whole.

It is beyond my province to judge the merits of these cases. A customs house is doubtless a commercial asset. A merger might have injured that manufacturer's market. Wide and accessible downtown streets are unquestionably a convenience. But unlimited public service and a modest tax burden do not go hand in hand.

If we are to seek economy in public expenditures sincerely, we must be willing to accept the deprivations that go with it.

E. KENT HUBBARD

CONGRESS IN REVIEW

Since a complete legislative review, now being prepared, will be in members' hands probably before this issue is mailed, we present here a sketchy review of the purpose of and action taken on the more important bills.

Taxes. Passed Liquor Taxing Act signed by President on January 11 to raise \$500 million annually. Revenue Act of 1934, May 10—to make detailed changes in rate structures of income tax schedules; shift some of the burdens from earned to unearned income, raising an additional \$480 million; to stop the loopholes of tax avoidance.

Money. Passed Gold Reserve Act signed on January 30, by which the dollar was deflated to 59.06% of former value giving treasury a profit of \$2,895,000,000—to revive trade through increasing prices, purchasing power; Silver Purchase Act signed June 19, authorizing purchase of silver by Treasury until it forms 25% of monetary stocks.

Banking. Passed Deposit Insurance Act signed by President June 16—to stimulate confidence in banks; Industrial Loan Act, June 20 providing \$440 million to stimulate industry through direct or share-the-risk bank loans by RFC and Federal Reserve for 5 year periods.

Labor. Passed Labor Disputes Joint Resolution signed by President June 19—to replace defeated Wagner bill providing for adequate government mediation machinery to bring about amicable agreements on labor disputes; Railway Labor Act to cost carriers \$65 million annually for establishment of annuities for labor pensions.

Investment Safeguard. Passed Securities Exchange Act signed June 6—to control exchange speculation and stimulate flotation of securities—to relax 1933 Securities Act by creating a bi-partisan commission of five having power to license exchanges, register securities, establishing exchange rules of practice and authorizing Federal Reserve Board to limit bank loans on margin.

Municipal and Corporate Banking. Passed Municipal Bankruptcy Act signed May 24—to give taxing units during 2 year emergency period the right to ask federal courts for approval of adjustment plans acceptable to majority of creditors; Corporate Bankruptcy Act, June 7—to permit reorganizations of corporations on approval of two-thirds of creditors and the courts.

Housing. Passed Home Owners Loan Act signed April 27—to guarantee Home Owners Loan Corp. bonds to be sold or exchanged and to remove mortgages and extend corporation authority to make other mortgage and modernization loans; National Housing Act creating Federal Housing Administration to insure 20% of loan risks to banks for home repairs or improvements and 80% of value of property, organizing national mortgage associations to increase available mortgage funds, insuring accounts of federal savings and loan associations by establishment of Savings and Loan Insurance Corp., stimulating business recovery through setting up a program for national drive on home

repairs and modernization.

Public Utilities. Passed Public Utilities Review Act signed May 14—(C I for June P21-a Johnson bill) to deny federal courts jurisdiction in suits to prevent enforcement of orders of state rate making bodies when state courts provide hearings and orders do not affect interstate commerce; Electric Rate Investigation Resolution April 14, directing FTC to make broad rate investigation.

Communications. Passed Communications Act signed on June 20—to stiffen control over communications by radio and wire.

Federal Relief. Passed Civil Works Emergency Relief Act, signed February 15; Hayden Cartwright Highway Construction Act, June 18; Emergency Deficiency Act, June 20—to continue CWA on smaller scale—to provide jobs by granting money to states for highway construction—to provide \$500 million for drought relief in Emergency Deficiency Act.

Foreign Trade. Passed Reciprocal Tariff Act and Foreign Trade Zones Act giving President power to raise or lower tariffs by not over 50% and for a 3 year period to negotiate reciprocal tariff agreements without consent of Senate; establishing limited foreign trade zones for processing and re-shipment of foreign goods without customs interference.

Air Mail. Passed Emergency Air Mail Act signed March 27; Air Mail Act, June 12; first to chastise air mail companies following charges of fraud by cancelling contracts and second enacting new legislation establishing new bidding rules, outlawing holding companies and interlocking directorates and reducing air mail postage from 8¢ for first ounce and 13¢ per additional ounce to a flat rate of 6¢ per ounce.

Farm Relief. Passed Farm Mortgage Refinancing Act in January; Farm Mortgage Foreclosure Act in June; Frazier-Lemke Farm Mortgage Act last day, unsigned; Jones-Connelly Farm Relief Act in April; Jones-Costigan Sugar Act in May; Kerr Tobacco Control Act unsigned; Crop Loan Act in February; Bankhead Cotton Control Act—all designed to ease farmers' debts, and crop production, reduce crop surplus and control marketing of certain crops.

Defeated Bills. Tugwell-Copeland Pure Food Bill; Frazier-Lemke Farm Mortgage Bill (differed from bill passing both Houses at close of session in that it provided for issuance of \$3 million in greenbacks for federal assumption of farm mortgages up to amount of greenback issue); Oil Administration Bill to get control of hot-oil runners; AAA Act Amendments to broaden licensing powers—reserved for next session; McLeod Bank "Pay-Off" Bill to refund losses in closed banks to depositors; Wagner Labor Dispute Bill (Joint Resolution passed instead to create commission—see Labor); Old-Age Pensions and Unemployment Insurance put off until next session; Connery 30 Hour Week Bill; Patman Bonus Inflation Bill.

BRASS AND COPPER

By L. M. Bingham

A drama of individualism . . . Time of action, 10,000 years . . . Actors, primordial hunter, copper-smiths of mediaeval guilds, monastery monks, proud, secretive English workmen and a group of indomitable Yankees who pushed an idea until it became the chief industrial brain-child of Connecticut and a great national industry . . . Denouement; Scovill Mfg. Co. . . American Brass Co. . . Chase Companies . . . Bridgeport Brass Co. . . Plume & Atwood . . . Seymour Mfg. Co. . . Bristol Brass Co. . . New Haven Copper . . . Waterbury Rolling Mills . . . Thinsheet Metals . . . Stamford Rolling Mills.

COPPER and zinc, melted and thoroughly mixed equals brass. Over a half million products may spring from it. Twenty years ago less than half that number were made from the metal—and oil was the melting element. Fifty years ago less than a thousand products resulted from the fusing of the two metals—this time melted in a crucible over a coal-burner pit furnace. One hundred and thirty-two years ago (1802, to save your rapid calculations) when the oldest of the present modern brass plants (Scovill Mfg. Co., Waterbury Conn.) started as Abel Porter & Company, it was the humble brass button that held sway as the single commercial product of the U. S. brass and copper (rolling and stamping) industry. Thirteen men did the work in a remodeled household factory, later moving to a water power mill where, by 1823, the then remarkable total of 20 gross of buttons were made in a single day.

Today, this company can produce nearly four times that number per minute and has a normal productive capacity of over 300 thousand pounds of finished mill shapes per day. Add the production capacity of the other 12 plants in the state, considered in this article, and you have in round figures a 3 million pound daily, or over 1 billion pounds annual capacity (approximately half of the U. S. production of 1929) which is 450 thousand times as much daily capacity as the entire annual consumption of copper and brass products both cast (foundry casting not considered in this article) and rolled in the U. S. in



J. M. L. Scovill—first president of Scovill Mfg. Co.

1820. The story of the factors which started copper, to work intermittently 8,000 to 10,000 years ago and began to gather real momentum in the "Valley of the Naugatuck" in the 19th century, is an important part of the romance of civilization, for only through the use of copper alloyed with zinc, tin, nickel and other metals, could man have bridged the wide chasm from the era of crude stone implements to the age of electricity. To highlight the mile posts of this progress in terms of every day usage is the task set for the following paragraphs.

Ancient Discovery and Old World Practice

Although no absolute proof exists, copper is believed to be most ancient of metals put to utilita-

rian use by man. Oldest, because implements made of it have been found in "smelters' hoards" of the Bronze Age unearthed one strata above stone implements.

It may be assumed, and quite logically too, that some primordial hunter was attracted to what he thought was a new kind of brown colored stone while walking across the bed of a dried up stream. Proudly he carried it to one of the tool makers of the day to have a rare new kind of weapon made. But satisfaction must have turned to wonder, then amazement, as the toolmaker's stone hammer failed to chip this strange stone but rather bent it out of shape, raising knife-like edges on the queer object. It was a copper nugget. Now it shed color like the sun's rays. Work-

EDITOR'S NOTE: The romance of Copper and its alloyed offspring—Brass, is here presented as the fourth in the industrial series of articles published consecutively in Connecticut Industry since the April issue as follows: "Springs" in April; "Bearings—Anti-Friction" in May; "Silverware" in June. As in former articles, particular emphasis is placed upon the development of the industry in Connecticut, including the necessarily brief sketches of each industrial concern now engaged in the business of preparing mill shapes by the casting, rolling or extrusion processes. Credit is given to Latrops "The Brass Industry," Osborn's "History of Connecticut," Volume 4, Bishop's "History American Manufacturers," Volume 1 and Sharpe's "Seymour and Vicinity." The story of the development of the "Office Machines" industry is scheduled for the September issue.



THE OLD method of pouring from crucible into molds. Caster is holding back dross and manipulating stream in the old crucible process.



THE NEW method which shows a battery of electric furnaces that melt and automatically mix the molten metal which is poured into the pipe-like molds standing in the background. The workman is removing a billet from mold. Other billets are lying on the floor in the center.

ing on, this crude workman possibly rough ground and finished with harder stone a polished dagger that flashed like a tongue of flame, mystifying even the chief of the tribe and medicine man, but which set all four on eager search for more brown nuggets. It is to be supposed that these expeditions were guarded with secrecy during the search and the experiments at turning these magic "stones" into far superior duplicates of tools and weapons then in vogue. But like all trade secrets, they gradually leaked out until the whole tribe was equipped with the tools and weapons which gave it marked superiority over other tribes in hunting, warfare and trading, if the latter was practiced in that early day. And then the secret spread to other tribes—thus establishing the extremely crude beginnings of an industry destined to become one of man's greatest benefactors.

Next, after hammering nuggets cold into all manner of shapes, doubtless by sheer accident, some of the brown nuggets were melted in the fireplaces which had been thrown up around some of the digging operations that followed in sequence the early scarcity of surface nuggets. From that happenstance must have come the first idea that led to roasting operations which ex-

tracted the pure copper from the ore—only one short step from the pit fire method which is even in vogue today in some small plants as a means of fusing copper with zinc to produce brass.

From the region of copper and other allied metal stores of the Continent came thousands of square miles of icebergs during the last great ice age. Nearly 70,000 square miles of these bergs were carried south, but in the movement, huge copper nuggets were broken off of the exposed lodes in the region of the Great Lakes, many of them being found later and worked up by the American Indian into spear heads, knives, tomahawks, trinkets and household items. That the Indians, like their continental antecedents, followed into the earth the outcroppings of copper after the smaller surface nuggets and boulders had disappeared, is proved by discoveries in the Great Lakes region as late as 1847. These brought to light a large number of crude stone hammers and several huge copper boulders which, in some instances as indicated by wooden sleepers under them, had been raised five feet from their resting place before operations were abandoned.

Turning again to the cradle of civilization, we learn from archeologists that the Egyptians

knew 8,000 years ago how to hammer native copper into sheets from which knives and harpoons were made. At a later period, chisels and adzes were added to the list of tools which were prototypes of the former Neolithic stone and flint implements. A German archeologist, Ludwig Borchard, in 1907, uncovered the ruins of the temple of King Sahu-Re at Abusir, built around 2750 B. C. and learned by copper stains found on stone that 1300 feet of 1.85 inch copper pipe had been used for rain water drains. A short length of this pipe found under the stone door sill of the temple showed that the drain had been made of short sections of copper which had been overlapped and hammered together around a circular form and that the ends, pushed into each other, had been closed by hammering where the joints could be reached. This hand wrought rain pipe line, covered with gypsum cement, should have been near water tight. At least it now rests in the Museum at Berlin as mute evidence of a well developed copper working industry which existed nearly 5,000 years ago.

Howard Carter, American Archeologist, has reported that the colors of paintings appearing on the walls during the Middle Kingdom (2160 to 1788 B. C.) period

gave a clue to copper smelting practices of that day. By this means of reckoning, Carter determined that the yellow stood for crucibles made of clay and that the accepted method of smelting gold and copper at that time was to seat two, four or six men around a hole-in-the-ground type furnace where "Founder's hord's" consisting of rude round cakes of copper have been found. These cakes were then pounded into copper sheet on stone anvils by stone hammers.

Paintings of the later period around 1471 B. C. showed advancement in the art of casting, one showing the advanced stage of casting two large copper doors with "bosses" or extensions to fit into the stone doorway in the temple of Amen at Karnak. The copper which had been smelted elsewhere was brought to these early founders in the form of "pigs" or "slabs" which markedly resembled the rough shapes of the copper and other alloys used in today's modern copper and brass casting shops. Over a pit furnace (square holes in the ground) fired by charcoal which was blown to white heat by curious foot-operated bellows, two workmen stooped as each treaded a bellows with one foot while holding with both hands the ends of two willowy sticks which cradled the crucible (melting pot believed to have been made entirely from fireclay in the shape of a butter bowl) over the coals until the metal was ready to pour into the molds nearby. Laborers in a chain gang line are shown dumping charcoal from baskets and carrying metal on their shoulders to the furnaces.

Although an inscription over this crude painting found by Carter, reads in part, "Bringing in the ingots of copper from the land of Syria for making the two doors of the temple of Amen at Karnak . . ." it is generally believed that the first rich vein of copper was found on the Island of Cyprus in the Mediterranean which was first under the influence of the Egyptian civilization.

From that island, at least, came its name. The Romans first called it *aes cyprium*, then **Cyprium**, finally briefing it to **Cyprum**. The Germans called it **kupfer** and the English smoothed it off to **copper** in the days of Queen Elizabeth.

In the ruins of the Mycenaean, Phoenician, Assyrian and Egyptian civilizations, were found countless copper and bronze objects, from copper buttons on a Pharaoh mummy coat, dating back to 5700 B. C., to many types of daggers and swords made of bronze. The collection also included what is believed to have been the first bronze statue, erected about 2500 B. C. to King Piapi, an Egyptian king of the Third Dynasty. The statue was practically a true bronze being composed of 13% tin and the balance copper. In this age of Bronze beginning about 1200 B. C. and ending about 300 B. C. the only metals in use were gold, silver, copper and bronze (made mostly of 90% copper alloyed with 10% of tin). As to the source of the tin used in the early bronzes there is a difference of opinion. Professor Gowland believed that it was a part of certain copper ores known as **stanniferous copper** ores. But elsewhere there is considerable evidence to show that Egyptian bronze was not made from smelting this combination of ores but rather came from a fusion of the two separate ores, the tin being obtained from Spain and Great Britain, then known as the **Britannic Isles**—a derivation of the two Phoenician words, **bre**-**ta**-**nac**, meaning land of tin.

During the heyday of the Ro-

man Empire, the wealth of the nation was figured in pounds of copper. A man owning 100,000 pounds of copper was called a "Centurion", and because he had more wealth to protect than other warriors, he invariably headed a Roman legion into battle. What a contrast from 19th and 20th century custom!

During the early Christian era (The Dark Ages) all articles made of copper or brass (brass then not the same as our brass but made from melting copper with calamine, an ore containing zinc) were produced by Monks in Monasteries for religious use. Had it not been for these gifted servants of the Church, the art of working in bronze and non-ferrous metals would have been forgotten.

From the monks in the Monasteries came the knowledge of copper and brass making which was employed next by the Germans after they had materially aided in the destruction of the Roman Empire. Because of a lack of knowledge of working copper and brass, England, prior to 1575, was obliged to import all such wares from Germany. About that time an enterprising German, named Hockstetter, appealed to the vanity and shrewdness of Queen Elizabeth by offering to supply the wealthy ladies of the empire with brass pins. She immediately grasped the advantage of having this luxury item made in England and granted a charter for the manufacture of brass wire for the production of these pins. Not content with transplanting the production end of the industry to England, a search was



THE EXTRUSION press, maker of hot "metal macaroni" as long as 100 feet.

made for copper ore in order to stop importation of the metal. So resultful were these expeditions that from about 1850 to 1875 England became the world's greatest producer of copper.

The secretive nature of the primordial man who found the first brown nugget must have been inherited by the brass founders pictured on the walls of Egyptian temples and, in fact, a good share of it came with the English brass makers who were "imported" by the rugged Yankee entrepreneurs early in the 19th century. The knowledge of the trade was gained only through years of long painstaking apprenticeship which was passed on quite often from father to son or to others who were apprenticed to the master founder. They were a proud group of men whose social life was promoted entirely through their own guilds and societies where secrecy was equal to that of degree work in a modern lodge.

The history of early brass making itself is beclouded because it is often confused in the ancient records with bronze and other copper alloys. Actually the practice of making brass by fusing or mixing of copper with metallic zinc (more often called "spelter", a derivative of the 16th century word for zinc, called "spiauter") did not come into use until the 18th century. Prior to that time calamine (a zinc ore) was thoroughly mixed with copper in glowing crucibles to make the so-called "sounding brass" mentioned in the Bible. To describe 17th century brass making is to practically identify the tools and methods in general use up to the introduction of the electric furnace in 1916.

Entering a 17th century brass foundry, according to Galon or Swedenborg, you would find something like the following arrangement. Three furnaces sunken into the floor, and to the right a large pit from which the furnaces are tended. A large and a small tub are setting on the floor, the larger one for the calamine and pulverized charcoal and the smaller for measuring and inserting it into the crucibles. Several crucibles are setting near the

furnace openings ready to be loaded. Charcoal and calamine are in separate bucket-like containers a few feet from the furnace openings, while several pairs of single tongs of varying sizes as well as double tongs are lying on the floor near the furnaces ready for use in handling the crucibles during loading and pouring operations. Other tools in close proximity are rods for stirring the calamine in the crucible, hook for many handy uses, iron paddle for mixing material in the crucible, shears for cutting the brass bar, potter's wheel for making clay crucibles, hammer for breaking up copper before charging, wheelbarrow for charcoal and cinders. A pile of copper in chunks is also a few feet from the pit furnaces. On one side of the room against the wall are three couches as the master founder and his two assistants stayed on the job for 24 hours each day 5 days a week.

After melting the charge the three crucibles were lifted with tongs from the furnace and skimmed into pits containing receptacles to catch the scrap metal for reworking. They were poured into a larger crucible used as a ladle and then poured into the stone molds by two men employing a special pair of tongs. After pouring, the mold was lifted to a horizontal position by means of an overhead hoist, unfastened and the slab of brass removed by workmen. As Galon's account relates, all windows were closed during pouring operations, the founder and helpers inhaling the fumes rising from the spelter (zinc a very volatile metal) to the tentlike fume catcher directly above the furnace which discharged them into the flue. The workmen, according to this historian, held "the end of their neckties between their teeth when they skim, carry or pour metal. By this precaution they diminish the effects of the fire and facilitate respiration." Where the skill of the master founder came in was in the proper care of the fires, the proper mixture, the right time to pour, care of the molds, and many other tricks of the trade so necessary to the production of high grade brass.



A BATTERY of presses like this make cold "metal macaroni" from these large alloy pancakes. They are cupped and grow smaller and longer as they are expanded by smaller and smaller dies in the press line rams, or plungers, to make seamless tubes. Because of the strain on the metal frequent anneals are necessary between operations.

The Early American Scene

Vanity of the early Colonials in demanding gilded brass buttons for their clothes combined with necessity for earning a livelihood to start the real foundation of the copper and brass industry of the U. S. in the valley of the Naugatuck when Waterbury was a village called Mattatuck. When the General Assembly agreed on the purchase from the Indians of a tract 10 x 18 miles which was destined to include Waterbury, Watertown, Plymouth and parts of Middlebury, Wolcott, Oxford and Prospect, it was thought that the tract would support about 30 families. Little did these rugged Colonials dream that a little over 300 years later the indomitable spirit, mechanical ingenuity and shrewdness of their offspring would turn a portion of the barren untilled land in the Naugatuck Valley into a thriving community of 140,000, built from the manufacturing and selling profits of brass buttons, brass and cop-



TANDEM ROLLS for rolling sheet brass.

per shapes, wire, tubes, sheet and thousands of business, household and luxury items of manufacture.

Most prominent of reasons for sprouting the seed of the industry in Waterbury and nearby settlements in the Naugatuck Valley was because certain ingenious pioneers found it necessary to earn a livelihood in some other way besides tilling the soil. They had but two other alternatives—either to starve or take up land in the Western Reserve, as all of the fertile ground had been taken up in that section years before their time.

John Winthrop, in 1644, had cast brass in his iron foundry at Lynn, Mass. Brass cannon were cast and stills and kettles hammered out from brass and copper by Casper Wistar, his associates and successors, before and after the Revolutionary War. The first perpetuating sprout of the industry took root as the household industry of the Grilley's (Henry, Silas and Samuel), who began in 1790 to make pewter buttons by casting them in a mold with the eye in a solid piece, which were finished by hand. Henry Grilley was the sponsor of this enterprise as he had just learned the process from an Englishman in Boston. At the close of the first decade of their

business association, the Grilleys improved their product by introducing an eye of iron wire. From Southington came Levi and Abel Porter, in 1802, to become associated with the Grilleys under the firm name of Abel Porter & Co., which began to manufacture brass buttons from sheet brass. Apparently, from all available records, this was the first successful attempt in America to make brass by the direct fusion of copper and metallic zinc according to the process discovered by James Emerson of England in 1781. Likewise, it marked the crude start of brass rolling in this country. Copper stills, ship sheathing, kettles, trinkets and other miscellaneous copper items that had been brought to this country by the early settlers, were purchased and melted with zinc to form brass ingots. They were rough rolled at an iron mill in Litchfield and returned to the household shop to be run cold through 2 inch steel rolls driven by horse power. Forms were stamped by dies into round, oval, convex or concave shapes; the face was gilded and the product was ready for the tin peddler who was then the chief distributor of consumer goods—the original door-to-door salesman. Additional supplies of raw copper and all zinc were imported from England, because the control of the only copper mine (The Simsbury Mine) in America, opened in 1706, had passed in 1757 to England, to be exhausted so far as practical operation was concerned before the close of the Revolution.

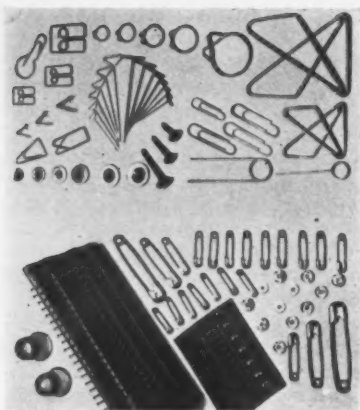
Prior to this time the brisk demand for military and other gilded buttons had been satisfied by importations from manufacturers in Birmingham, England, who were established in the business of casting buttons before 1700. Competition then was even more difficult than now but for different reasons. The English had had years of experience in the art of brass casting, rolling, forming and gilding; the Connecticut pioneers had practically none. The English had the most up-to-date equipment then obtainable; the Yankees had only makeshift apparatus and no adequate tariff to protect their budding in-

dustry. Little wonder, then, that brass buttons could be plated with gold and given a better finish by the English for six cents per gross than in Waterbury for \$3.00!

Determined to overcome these great odds, James Croft, an Englishman, was first hired by Leavenworth, Hayden and Scovill, the partnership succeeding Abel Porter & Co., in 1820, making good his claim that he could secure the orange tint which the Americans desired. Meantime another ingenious Yankee, Aaron Benedict, (earliest antecedent of American Brass Co.) who had seen Abel Porter & Company making progress, gave up the manufacture of bone and ivory buttons and in 1822 became associated with four other men, raised \$6500 capital and started to give some competition to the original pioneers. Like his more experienced competitors, Benedict soon discovered that he must find a way to "wrap the orange color" around the buttons as well as to meet English prices if his company was to prosper. So he obtained the services of Mr. Croft who was sent to England in 1823 to secure heavier rolling machinery. In addition, he brought with him Samuel Forest, an expert toolmaker. Thus it came about that Benedict began to roll his own brass which had formerly been rough rolled at the iron mill in Litchfield, and that the Scovill plant started in 1829 to do all of its own rolling.

James Croft's expert knowledge of equipment, of the art of brass making and gold plating gave the struggling new industry its first real sinews—changed it from a household enterprise of individual handicraft to the beginnings of a factory system with its consequent division of work. It combined also with the business acumen of the founders of the first two ventures to bring realization to the managerial dreams of several of the Yankee workmen who were destined to aid materially in laying the broad foundation of one of the nation's greatest industries within the next three decades.

With the acquisition of the new rolling mill equipment and added knowledge of processing, the two original concerns were able to produce slightly more sheet



FORMS that brass and copper may take—or thousands more unseen.

brass than was needed for the button trade. A small amount of this was sold to Boston manufacturers of kettles, fire engines, grates and fenders and for the production of rolled silver plate. (Electroplating did not come in until after 1837.) David Hayden of Leavenworth, Hayden & Scovill had found other uses for brass in the manufacture of whale oil lamps and sundry small articles.

Because the margin of profit was large during the earlier years of the industry, the spread being as high as 47 cents per pound between cost and selling price, Israel Holmes, an employe of Scovill's (founder of 2 of the original American Brass group), raised \$8,000 in capital and in combination with seven other men, started the manufacture of sheet metal and wire in 1830 under the firm name of Holmes & Hotchkiss. Eight years later the firm name was changed to Brown and Elton under which it continued until dissolved in 1856. Mr. Holmes, a master salesman and organizer, restless and therefore never content with continued association in any company after it had reached a certain peak of development, was responsible for the organization of six companies before his death in 1874 and was easily the most influential and dominant character among the early founders.

Mr. Holmes' qualities of leadership almost immediately became evident at the start of his first venture when, in 1831, he went to Birmingham, England,

secured three sets of rolls and six wire blocks, a caster, roller, wire drawer and tube maker despite the then strict English emigration laws forbidding expert workmen from leaving the country. This filching of machinery and expert workmen from under the eagle eye of the British crown, made possible the first drawing of wire and making of brazed tubing in this country. These tubes were sold first after 1836 for interior gas piping, the New York Gas Company being the first customer.

After the advent of Holmes & Hotchkiss, overproduction of both sheet and wire became evident both on account of extra capacity, competition from abroad and the fact that the inventive genius in other lines had not yet established other industries which could use the supply of brass mill shapes. It was therefore necessity which forced the Waterbury brass manufacturers to fabricate their own unmanufactured product into saleable items. Holmes & Hotchkiss, finding an excess supply of wire on their hands and seeing the possibility of a large profit, began the manufacture of hooks and eyes (hooks and eyes cost around \$1.50 a gross in 1810) around 1840 and two years later started to make pins.

Mid-Period Development

During the period from 1830 to 1850 a large number of new enterprises were started, for it was during these years that the invention of the telegraph, the brass clock and the introduction of rolled brass door butts extended the market for brass rolling mill products.

In 1835 Israel Coe, one of Aaron Benedict's first partners in the firm of Benedict & Coe (second brass firm started in 1822 which became Benedict & Burnham in 1834—earliest antecedent of American Brass Co.) severed his connection with Mr. Benedict, becoming associated with Anson G. Phelps, of New York, John Hungerford and later

the indomitable Mr. Holmes who had just sold his interest in Holmes & Hotchkiss to help organize this new company, called the Wolcottville Brass Company in what was then Wolcottville, now Torrington. This venture which began by attempting to produce brass kettles by the battery process (hammering over forms from brass blocks) had difficulties arising from the cracking of the metal under the hammers, and later with the indifference of workmen who had been brought in by Holmes from England. Like aged whiskey they came "in the wood" for Holmes put them in kegs to secrete them out of England and likewise floated them to shore by night at the mouth of the Naugatuck river. Later, in 1842, Mr. Coe visited two establishments in Europe where he secured the right mixture and the proper annealing process to vastly improve the product and make for a few years of prosperity before the perfection of the spinning and turning process, invented by H. W. Hayden of Scovill's, ruined their business.

The company had scarcely been launched when Mr. Phelps, who had made a fortune from his tin, copper and brass importing business in New York (founder of Phelps, Dodge Copper Co., large independent operators of copper mines) withdrew and started with some other men a copper rolling mill in Derby. He felt



FINISH obtainable in brass and copper is illustrated by these products.

that he could successfully compete with the mills in Waterbury because of his large capital and purchasing advantages. The partnership, known as Smith and Phelps, located its mill on the west bank of the Naugatuck River, calling the new settlement Birmingham, after Birmingham, England. Workmen and machinery were imported from England as in the case of Benedict & Coe, Holmes & Hotchkiss and Wolcottville Brass Co.; others were hired from Wolcottville and Waterbury. Despite the depression of 1837 and a fire in 1838 which wiped out the plant, it was a successful venture.

Encouraged by this success, Mr. Phelps sought to control the surrounding acreage with a view of organizing a large manufacturing community at Birmingham, but his plans were arrested when a speculator, hearing of his plan, bought a farm which was essential to his project and boosted the price from \$5,000 to \$30,000. Angered by this move, Phelps abandoned the Derby plant and organized the Ansonia Brass and Copper Co., building a plant just across the river. It was likewise a success, growing to be one of the largest plants in the trade. Its success definitely added the handling of copper to the already established brass business.

The ill-fated Wolcottville Brass Co. had first been deserted by Mr. Phelps two years after its founding, and then by Mr. Holmes who, with John P. Elton, organized the Waterbury Brass Company in 1845, which later became one of the most important producers of brass and nickel silver, sheet copper, wire, rods and tubes, as well as large manufacturers, of rivets, jack chains, lamps and lamp fittings and numerous important special devices. The management of the company then fell to Mr. Hungerford for a few years until it was reorganized as the Coe Brass Company by the same group of men who had originally started it, with one addition, Lyman Coe, son of Israel Coe.

Again in 1853, Israel Holmes broke loose from the presidency of a thriving company to organize the firm of Holmes, Booth

and Haydens to roll metal and manufacture it on a large scale, chiefly concentrating at the start on Daguerre photographic plates which had previously been produced almost entirely by Scovill since three years after the new process of photography was patented by a Frenchman named Daguerre.

Taking the facts as they appear in the records without knowledge of his inner motives, it would almost appear that Israel Holmes had deliberately gone forth from the Scovill plant to spin a web of competition around his former employers in the hope they would become hopelessly enmeshed. Previously, in 1850, Mr. Holmes had been a leading spirit in the organization of the Bristol Brass & Clock Company by a group of men who had become interested in the manufacture of brass clocks carried on for a time at the Wolcottville Brass plant. His final venture before the close of his career, probably the most romantic recorded in the annals of Connecticut industrial history, was the organization of Holmes, Booth and Atwood in 1869. The name was disallowed by the state because of its close similarity to Holmes, Booth and Hayden. It was changed to Plume and Atwood in 1871, becoming a most important factor in the industry, its chief manufactured product at that time being the so-called "Rochester" oil lamp.

During this formative mid-period in the development of the brass and copper industry, several other concerns of importance were started, notably, Thomas Wallace & Sons at Ansonia in 1848, to draw wire and roll sheet brass; Osborn & Cheeseman at Birmingham (Derby), to make hoop skirt wire and the Howe Mfg. Company, pin manufacturers, which was brought from New York to Derby in 1858 through Mr. Phelps' influence; the Coe Brass Company, organized by Lyman W. Coe in 1863, which took over the assets of the Wolcottville Brass Company specifically to make brass for metallic cartridges which were first made by Smith & Wesson at Springfield, Mass., in 1861.

The exorbitant cost of imported pins during the colonial

days, and even until long after 1812, gave impetus to the pin industry in this country as well as meaning to the phrase "pin money". As previously mentioned, Holmes & Hotchkiss (later in 1838, Brown & Elton) were the first to successfully make pins in Waterbury about 1842. Chief of the difficulties encountered in their manufacture was the lack of machinery to produce them rapidly, and likewise, machinery which would fasten them on cards. Dr. J. I. Howe of New York, invented a successful pin making machine in 1831, later used in the Howe plant at Derby. Fowler Brothers of Northford, Connecticut, were making pins during the 1830's with a machine invented by one of the brothers which had certain features superior to the Howe machine. Slocum & Jillson of Poughkeepsie, New York, were also producing pins. The latter company worked with Dr. Howe to perfect a sticking or carding machine. Finally in 1842, Brown & Elton bought Fowler's and four years later with Benedict & Burnham organized the American Pin Company, which included the plant, machinery and patents of Slocum & Jillson. Thus, two pin companies came to dominate entirely the domestic market before 1850, and continued to produce the majority of pins up through 1908 when the Howe plant was acquired by Plume and Atwood. Connecticut still dominates the pin market of the country.

Another outgrowth of the activities of Mr. Phelps in Derby and Ansonia was the Humphreysville Copper Company, organized in 1849 to roll copper sheets and which today is known as the New Haven Copper Company. It will be considered later under company history.

Mergers and Modern Practices

Prior to the law of 1837, authorizing organization of joint stock companies in the state, all companies formed were partnerships. This new law which defined the privileges and powers of companies gave a great impetus to new and larger combi-



John P. Elton
Brown & Elton
Waterbury Brass

nations of capital in new ventures in brass and copper manufacturing and to mergers of the old partnerships and joint stock companies into large corporations in the latter part of the 19th century and early part of the 20th, the last one being in 1929. The first consolidation of several existing companies occurred in 1899 when the Coe Brass Company, the Waterbury Brass Company and the Ansonia Brass and Copper Company came together to form the American Brass Company—a holding corporation. The following year Benedict & Burnham and Holmes, Booth & Haydens, apparently believing in the story of the “bundle of sticks”, joined their activities with the other three companies under the protecting wing of the American Brass Company. The purchase of the Chicago Brass Company by Coe Brass shortly afterward completed the early organization. In 1912 the American Brass Company became an operating company and in 1917 acquired the Buffalo Copper & Brass Rolling Mill, a concern then practically bankrupt, but which was placed on an efficient basis to meet war-time production demands, and since the war, those of product manufacturers in the Buffalo

radius. In 1922 the Anaconda Copper Mining Company acquired the American Brass Company, thus completing the first “mine to consumer” organization which was likewise the largest producer of brass and copper and alloys of copper in the United States. In 1927, the Detroit Copper & Brass Rolling Mill, which was incorporated in 1880 by Fred H. Seymour and R. W. Gillette, former secretary of Wolcottville Brass Company, was acquired.

plants of the company as well as five subsidiary companies, all of which have been acquired since 1903.

Other companies that were later to become prominent factors in the industry were organized as follows: Bridgeport Brass Co., in 1865 to make brass clock movements, and The Seymour Mfg. Co. to make nickel silver sheets, wire and rods. These and several smaller concerns are considered later in the article.



Anson G. Phelps
Wolcottville Brass
Smith & Phelps
Ansonia Brass & Copper



Aaron Benedict
Benedict & Coe
Benedict & Burnham

In 1929 the Chase Companies, Inc., whose antecedents date back to 1837 and whose first president, A. S. Chase, was very prominent in the business and civic affairs of Waterbury as well as being one time president of Benedict & Burnham, was acquired by the Kennecott Copper Co., forming the second “mine to consumer” organization.

The Scovill Mfg. Co., so chartered in 1850, reputed to be the largest single unit brass rolling and manufacturing organization in the U. S., has consistently remained independent of mergers with suppliers or other overshadowing organizations. It has nevertheless acquired over five manufacturing organizations which have been absorbed into existing

Throughout this latest phase of development between 1865 and the present, the expansion of the telegraph and telephone systems, the clock, hardware, bicycle, electrical, silverware, pin, bearings, radio, automobile building and giftwares industries were most prominent consumers of brass and copper sheets, shapes, wire, rod and thousands of manufactured items.

An appraisal of the factors which made for the success of the brass and copper industry in Connecticut must include the following: 1. Energy and initiative of the entrepreneurs. 2. Skilled labor supply not obtainable elsewhere; 3. Good margin of profit; 4. A tariff that encouraged new enterprise through providing op-

portunity for lucrative profit; 5. Inventive genius resident in Connecticut.

Tariff

That the tariff was adequate was not due to the foresightedness of our politicians, but to the manufacturers themselves. Although there had been a tariff on brasswares, pewter, tin and copper almost from the beginning of importations, it required

ing hours of Congress, March 2, 1833, was to maintain the 25% tariff rate established in 1818. Probably the tariff accomplished the greatest good between 1830 and 1860 when the industry was passing through its first period of growth and development.

Labor

From the very start of the industry, male labor was employed. It has continued to be the prac-



Israel Holmes

Holmes & Hotchkiss - Holmes, Booth & Haydens - Wolcottville Brass - Waterbury Brass Co. - Bristol Brass Co. - Holmes, Booth & Atwood



Israel Coe

Benedict & Coe and Wolcottville Brass



A. S. Chase

Chase Companies

prentices in order to increase the amount in their pay envelopes. Individual skill of the master founders has played such an important part in the value of workmen that it has been impracticable to set a uniform wage scale. The system of paying helpers slightly more than the market price as well as the head founders or mechanics tended toward increasing specialization prior to 1900, but since then as processes became more mechanized, capitalization of individual experience has been gradually on the wane.

Profits

The spread between the cost of raw materials plus labor and the selling price varied from 100% down during the formative years up to 1850. Since then, due to keener competition, profits have gradually dwindled. Today the price of sheet brass and wire in the coarser grades runs only slightly above the cost of copper, which means the measure of profit is largely dependent upon the proportion of zinc and copper which enter into the finished product, patent rights, secret processes and special machinery. The law of supply and demand also governs the profit on the products as a whole.

considerable pressure from representatives of the industry to secure adequate rates which would assure the continued expansion of the industry. Israel Holmes and Israel Coe were chosen in 1833 to secure a reversal of decision by the Secretary of the Treasury which ruled sheet brass and wire as unmanufactured articles to be admitted free of duty. Connecticut representatives were seen; also Mr. Clay, author of the legislation that admitted manufactured articles free. Since no change could be made in the original bill, a new bill was introduced ordering the Secretary of the Treasury to include sheet brass and wire in the list of manufactured articles. The effect of the bill, which passed in the clos-

tice with the exception of the war-time rush until the present. Starting with imported English skilled labor the industry continued to be largely dependent on it until about 1850 when sufficient American skilled workmen were available to man all skilled operations. From then on, American skill in brass making surpassed the English. How the Yankee learned from the secretive English brass maker was through very clever maneuvering of the wage scale. When the English workers at the Wolcottville Brass mills refused to teach American apprentices, wage scales were changed to the per pound production basis which practically forced the master workers to take in American ap-

Raw Materials

Until about 1850 the supply of raw copper and zinc was largely imported except for the small amount of copper acquired from melting old ship sheathing, kettles, stills, etc., and a very limited quantity which came from the unprofitable mine at Simsbury, Conn. Between 1845 and 1850 certain capitalists of Boston started to exploit the mine deposits around Lake Superior and then interested J. M. L. Scovil and other brass men in Waterbury in forming the Waterbury and Detroit Copper Co. in 1850, which erected the first domestic smelter to handle Lake Superior copper. Later on another smelter which had been erected at Portage Lake by another concern, was purchased and the name of the company changed to the Detroit and Lake Superior Copper Co. This company controlled the smelting of Lake Superior copper until about 1870 when the mining companies began to erect their own. From the first commercial operation of domestic copper mines in the Lake Superior region just prior to 1850 to 1880 when large deposits in Montana and Arizona were tapped as well as more recently, rich deposits in Peru and Chile, practically all supplies of the raw ore came from the Lake Superior region.

Zinc, the other raw ore required in the manufacture of brass, was entirely imported until 1867 when Wisconsin ores of zinc were first smelted at Coronado, Missouri, and sold in the domestic market. After 1870 the U. S. was entirely independent of foreign sources of supply of copper, zinc and lead. It now exports large quantities of both copper and zinc ores.

Competition and Agreements

Until after 1880 practically all of the competition which existed was between the various mills in the Naugatuck Valley. This became so strong at times that various pools and other price agreements were entered into between 1851 and 1895. In one of these agreements (1856) prices and dis-

counts were fixed, production quotas apportioned and a penalty of 3¢ per pound agreed upon for each pound manufactured over quota, the same amount being withdrawn from the pool for each pound of allotment not marketed. These agreements, first stimulated by grim necessity in an attempt to recover from the depression of 1857 varied from mere price agreements entered into by practically all mills to those which included complete control of production, prices, trade practices—a veritable AAA which might have been named more properly BAA. George P. Cowles, executive of the Ansonia Brass and Copper Co. for a time was executive officer of the pool, which became known as the American Brass Association. Later A. M. Blakesley of Waterbury became executive head. The pool of 1851 is believed to mark the first example of American industrial cooperation on a large scale.

Expansion Beyond State Line

Prior to 1880 only 3 brass and copper companies (meaning rolling mills as distinguished from foundry casting) existed outside of Connecticut. These were the Manhattan Brass Co., Brooklyn Brass & Copper Co. and the Rome Iron Works. The second company was organized by John Davol, formerly with the Wolcottville Brass Co. and later head of the Bridgeport Brass Co. The latter two had no connection with the Naugatuck Valley (and other Connecticut Companies) except to get started by hiring one or more experienced men from one of the valley plants. From 1880 on, plants were started in Detroit; Chicago; Kenosha, Wisconsin; Bayway, N. J.; Hastings, N. Y.; Decatur, Illinois; Baltimore, Maryland; East Alton, Illinois; Plainfield, N. J.; Riverside, N. J.; Great Falls, Montana; Lisbon, Ohio; Taunton, Mass.; and Watertown, N. Y. Several of these plants were either organized by Connecticut men or included much Connecticut capital. Practically all drew from the skilled labor supply to some extent.

Despite the outside competition the output of Connecticut mills, which prior to 1880 accounted for more than 80% of the domestic production, accounts for approximately half of the nation's brass mill products.

Modern Processes

From antiquity to the year 1917 when the electric furnace was first used by the other large producing units of the industry (Bridgeport Brass, the first in 1916), there had been comparatively few advances in the art of brass making. The pit furnaces for melting, the crucibles in which the ores were melted and the tools of the master founders of 300 B. C. or 1500 A. D. bore a marked resemblance to the modern method until 1917. The chief differences in equipment and practices were:

1. Mediaeval furnaces discharged fumes into canopy at ceiling which carried them into flue, while modern ones carried off the gases of combustion at the side of the furnace directly connected with the chimney.
2. Old furnaces accommodated several crucibles; modern ones but one.
3. Charcoal or wood used in old furnaces; modern ones employ anthracite coal or coke.
4. Modern crucibles differ from ancient only in their composition, employing graphite and fire clay instead of the latter alone.
5. Modern molds are made of soft gray iron while the ancients used stone called "Britain stone".
6. The ancients mixed fine calamine (ore containing zinc) and small cubes of copper ore while moderns mix exact proportions of metallic zinc with small chunks of copper to form the charge.

A proper introduction to modern brass making must include definitions and certain terms used in the industry. Brass, as a generic name, covers a wide variety of copper alloys which have technical class names according to their chemical constituents. Brass is an alloy of copper and zinc with or without admixture of lead. Bronze is an alloy of copper and tin without zinc. Cuprometal is an alloy of copper and nickel with or without lead. Nickel silver is an alloy of cop-

per, nickel and zinc with or without lead. Various other trade names are given to other variants.

Alloys in the Brass group are usually sub-classified by color, which depends on the proportion of copper in the alloy. "High Brass" yellowish, contains lower ratio of copper. "Cartridge Brass", also yellow runs higher in copper. "Low Brass" golden, runs still higher in copper, while "Gilding" a rich red in color, contains the highest proportions of copper even up to 95%.

The three stages in the production of a useable product include:

1. Mixture, melting and casting.
2. Mill processing into forms of sheet, wire, rod, tube or shapes like moulding.
3. Fabricating from mill forms into diverse manufactured product.

Modern casting practice requires careful control of both quality and proportions of mixtures entering into the final mixture, temperature control, proper stirring of mixture (in electric furnace this is accomplished by electrolytic action of furnace) to avoidance of gaseous or other impurities by vaporization of elements; to temperature and other conditions while pouring as well as the condition of the moulds in which the metal is cast. In short, successful brass making involves an infinitude of detail which must be mutually interacting. Although involving large quantities and mass production methods, in a sense, yet the mass production of brass differs widely from the vast tonnages of the iron and steel industry in that it is a job lot industry measured in pounds rather than tons.

Products of the casting shop which are made up from slabs of nickel, lead, tin, and pigs of copper and zinc are: bars for making sheet metal, wire and seamless tubing; billets for extending rod or tube, wire, (formed products or hot piercing tube; sand casting which must be turned and cleaned to form plumber's cast products. This process is merely mentioned but not further dealt with in this article).

Mill processes used are governed largely by the equipment available in each mill (not a fac-

tor in large establishments) and the physical specifications of gauge and temper to be met in the final state of the product. Processing to gauge which produces a continually hardening temper, must be counteracted by annealing in oil fired furnaces operating at high temperatures. Infinite care must be taken in each production step in order to reach exacting specifications as to temper and gauge at the same moment in the final step. Unless these two specifications are met the finished piece must go the "way of all scrap" back to its own bin of metal with similar content and from there go through the entire process again.

In the production of sheet brass the bar or slab is cropped on the ends, thoroughly milled or scraped to remove surface imperfections and then reduced to proper gauges and width by successive rolling operations with intermediate annealing to relieve undue strains and to soften for further rolling operations.

Wire is produced by two methods—

1. From bar weighing from 135 to over 700 pounds, which is heated to a red heat, passed through a series of grooved rollers until it is about $\frac{3}{8}$ " in diameter and reduced in a cold state to any desired size as small as the human hair by drawing it through a series of dies.

2. From round billet casting heated to red heat and extruded from a giant machine which literally squirts large gauge wire which is further reduced cold by drawing.

Tubing is produced by any one of three processes—cast shell, hot piercing and cupped shell process. In the shell process, tubes are made from a hollow cylindrical which may be extruded as a hollow cylindrical or in the form of a cored casting. It is reduced to size by successive drawing operations through a round hole die, in the center of which a steel plug is inserted which controls the outside and inside diameters of the tube. The hot piercing process consists of heating a cylindrical billet to red heat and passing through the power driven rolls with great force, it encoun-

ters a projectile-like steel point carried on a long rod over which it is forced. Successive draws between anneals finish the process. In the cupped shell process, tubes are first cupped from flat discs in powerful hydraulic draw presses, being passed along from one press to another, each extending the tube by means of smaller and smaller dies, forcing the tubing to the desired length. It is then drawn in a similar manner as described in the cast shell process. In this method, all work is done cold. The process chosen depends largely upon the chemistry of the metal as certain alloys can be subjected to but one process without cracking or injuring temper.

The drama of the brass and copper industry extends beyond the rugged and ingenious personalities of the foundries into certain factory operations. For example, as one brass research man put it, "to take an eight foot bar of metal, perhaps two inches thick and eight inches wide and pass it through rolls that thin it out, longer and longer until it finally curls up in a coil hundreds or even millions of feet long, is to feel like one of the Titans of the earth. But it becomes a descent into the interior caverns of Vulcan himself when one sees the huge extrusion press absorbing a red hot billet and sending it forth in the form of many small rods issuing simultaneously in snaky glowing lines a hundred feet long. More striking yet is the mystical operation of the Mannesman Machine (hot piercing processor) which takes the red hot cylinder of brass and, revolving it against a mandrel, literally turns it inside out into a pipe with a quarter inch wall."

Yet the foregoing episodes in the life of a "hunk of brass" are tame, in a sense, to the action of the batteries of powerful presses which batter a slab of cold metal by successive operations into an impeccable seamless tube.

Products and Uses

The potential uses for copper and brass may never be known exactly for centuries to come, but

it is safe to say at the moment that over a half million different items can be made from them and from other alloys containing copper as a part of the mixture. Brass, the most widely used and most valuable, bears somewhat the same relation to copper, although for different reasons, as steel does to iron. It is harder than copper, takes a high polish and possesses a high degree of ductility and malleability. It is easily fusible and not a good conductor of heat. Because of its higher cost, brass is not adapted for heavy castings, nor for construction work. Since it cannot be tempered like steel, it cannot be used for cutting tools. But for an infinite variety of small wares or for other purposes where its color or durability is desirable, it is the most available and useful metal known.

A few of the thousands of applications for copper and brass are: lamps, auto headlights and radiators, electric light fixtures, novelty goods, buttons and ornaments, common pins and safety pins, brass and copper pipe for water distribution lines, copper leaders, gutters and downspouts for carrying rain water, telephone and telegraph lines, light and power transmission lines, automobile and other machine bushings and bearings, electric refrigeration, radio receiver sets, clocks, watches, hardware, extruded shapes for railings, bank grilles, screens, balustrades, mausoleum work, gates, doors, radiator enclosures, etc., silver plated spoons, forks, knives and hollowware, telephone parts, fuse parts, hinges, butts, trays and a host of similar commodities too numerous to mention.

An unusual product called "Electro-Sheet" is a new form of very thin, wide copper sheet which is being used with asphalt for a new type of built-up roof construction. Built-up sheet copper roofing may be described as alternate layers of asphalt and "Electro-Sheet" built-up on the roof. Outstanding advantages of such roofs are ease of application, smooth appearance and the lasting and superior durability of a copper roof at a price which compares favorably with the bet-

ter grades of multiple-ply felt roofing.

Beryllium Copper is likewise a new and remarkable development which permits copper to be hardened in a manner similar to steel by heat treating. Small amounts of beryllium are added to pure copper resulting in an alloy which can then be worked to the desired shape or form and then hardened by heating and cooling. A large variety of tools including hammers, knives, chisels, screw drivers, non-sparking powder makers' tools and numerous others are made from beryllium copper. In wire form the metal has unusual spring qualities.

Review

Copper, like silver, has traveled "the royal road to romance", but followed a different route. The romance of copper and its close relative, brass, has been spun around strong characters; resourceful men, some of whom were blessed with a happy combination of initiative, determination, judgment and vision. Others had merely the first two qualities as implements to cultivate success. The romanticism of silver and the industrial arts engaged in its use, is more closely aligned with the conquests and "rushes" for the metal and the mass phobia induced by politicians than with personalities.

We have followed the evolution of the "brown" nugget, copper, under the stone hammer turning into weapons and objects of utility, through pit fire pellets, which combined with other mixed ores to form bronze, copper and brass church pieces and other utilitarian objects of peace and war, to the countless forms of today which have been made possible largely through an indomitable group of Connecticut "Yankees". So well did they build the foundations of the U. S. brass and copper industry in the "Valley of the Naugatuck" during the first half of the 19th century that Connecticut still continues to produce approximately half of the domestic production and through its outside subsidiaries, controls considerably more.

Ed. Note. Because of space limits and the fact that the stories of founding and development of many present Connecticut companies have been told in part throughout the earlier part of this article, the individual histories of each of these companies previously discussed, have been limited to a consolidation of loose ends with a few additional facts of importance. Despite the merits of the present managing heads of the industry, their accomplishments have been scarcely mentioned because they are sufficient in themselves to constitute another chapter in the development of the brass and copper industry.

Scovill Mfg. Co.

Oldest of the group of brass and copper rolling mill products producers in the U. S., its history rightly dates back to 1802 when Abel Porter and Co. was formed by Abel and Levi Porter and Daniel Clark to make wire-eye brass buttons struck from brass sheets first rolled in Litchfield and finished in its own household plant. Total employes then numbered 13. Within 20 years the company became self-sufficient in its operation.

In 1808 David Hayden, from Attleboro, Mass., joined the partnership and brought to it his experience in button making as practiced in Massachusetts, James M. L. Scovill, son of an honored Waterbury merchant farmer, came into the business as a junior partner in a new firm Leavenworth, Hayden & Scovill, organized in 1811 after the acquisition of a plant—the old town grist mill, in 1808; the retirement of Levi Porter in 1806 and sale of Silas Grilley's interest in 1807. The first attempt at diversification of product came in 1817 when Hayden started the manufacture of brass lamps, built a machine to cover buttons with cloth and began the production of other articles of brass which were destined to number into the thousands a century later.

When Leavenworth and Hayden sold their interests in 1827 Mr. J. M. L. Scovill and his brother William took over the

business as a partnership. The brothers complemented each other, working together in harmony during the next quarter century, laying the foundation and building up the structure of the company which is now considered the largest independent brass products plant in the U. S. During their association together, two new establishments were formed. Scovills and Buckingham, established in a neighboring town in 1836 to manufacture butt hinges, was the first, and Scovills and Co., which took over the button business in 1840 was the second. S. M. Buckingham who began as a clerk with the Scovill brothers and who served later as president of the Scovill Mfg. Co. from 1857 to 1861, was one of the partners in these two enterprises.

Between 1811 when Leavenworth, Hayden & Scovill employed \$5000 in the business and in 1850, when the organization was incorporated as the Scovill Mfg. Co., merging the button shop, the butt hinge factory, and the brass mill with a capitalization of \$200,000, the capital had been gradually increased. But these increases largely represented profits that were plowed back into the business, which was the practice with all other brass and copper companies organized before 1850.

After the photographic invention of Daguerre, a Frenchman, Scovill became the leading manufacturer of silver plated copper plates for the daguerreotypes, which were said to excel those produced by the English and equal the best product of the French. Shortly afterward the corporation started production of German silver (now called nickel silver) and after 1860 became a leader in the plating of copper with gold, silver or platinum by the process invented by a Frenchman, Eugene Martin, who was employed by the company. Next outstanding profit-maker to enter the fold of the Scovill products was the "Queene Anne" lamp, designed by the company to burn kerosene, which had largely displaced whale oil as a fuel. This item has been one of the company's standard products ever since.

As an outgrowth of the photo-

graphic plate came the development of small cameras and photograph supplies. Later evolution of the business to one employing principally non-metallic materials caused it to be taken over by Scovill and Adams of New York in 1889 and after a merger became Anthony & Scovill, a direct predecessor of the present "Anso" Co.

Production of coins and metals has been an interesting phase of the business since 1834. An outstanding accomplishment in this field was the production of 23,757 medals awarded by the management of the Columbian Exposition in 1893.

The scope of Scovill products is extremely broad, covering thousands of individual items of brass, copper and other alloys and also of steel. A broad classification of the company's products includes: mill products in brass, bronze and nickel silver in the form of sheets, rods, wire and tubes; screws, buttons and other stock articles like butts and hinges, wire buckles, ferrules, thimbles, etc.; lamps (oil and gas) and parts for electric wiring devices; electric motors—smaller household types, spring motors, valves, novelties, blanks, screw machine products, munitions and brass and aluminum forms, both cast and forged. Scovill's products made in the company's 200 buildings covering about 165 acres, reach all points of the globe.

Manufacturing divisions of the company are: Oakville Co., Oakville, Conn.—pins, hooks and eyes, bent wire goods; Plumbers Brass Goods Division, Waterbury, Conn.—valves, fittings; Morency Van Buren Mfg. Division, Sturgis, Michigan—closet tank fittings; Hamilton Beach Mfg. Co.—motor driven electric appliances, motors, etc.; A. Schrader's Son, Inc., Brooklyn, N. Y.—pneumatic tire valves and air pressure equipment. Other plants that have been absorbed into existing plants of the company are: Matthews and Willard, Waterbury, Conn.—brass goods; Gilchrist Co., Newark, N. J.—soda fountain equipment; Arnold Electric Co., Racine, Wisconsin—soda fountain equipment; O. K. Manufacturing Co.,

Oswego, N. Y.—office equipment.

Present officers of the company are: Edward O. Goss, president; John H. Goss, vice president and general superintendent; George A. Goss, Bennet Bronson, Chauncey P. Goss, Jr., William M. Goss, vice presidents; Leavenworth P. Sperry, treasurer; Francis T. Reeves, secretary; John V. Montague, assistant treasurer; Burdon P. Hyde, Thomas B. Meyers, Whitman W. Bowers, Charles F. Doherty, assistant secretaries.

American Brass Co.

This company, the largest manufacturer of brass and copper mill products and job producer of manufactured products from these two metals and other alloys, came into being in 1899 and 1900 as a result of consolidations of a number of companies discussed previously in this article, the names of which are most recently mentioned on page 10. But the first root of the business was cultivated by Aaron Benedict, founder of the Benedict & Burnham Co. Other men who may be considered founders of the company are: Israel Coe, who was a partner of Benedict's from 1829 to 1834 and co-founder with Anson G. Phelps, John Hungerford and Israel Holmes of the present Torrington branch of the company, first known as the Wolcottville Brass Co. in 1835 and later as the Coe Brass Co. in 1863 when Lyman Coe reorganized the old company; Israel Holmes, who with John P. Elton formed the Waterbury Brass Co. in 1845 and with H. H. and H. W. Hayden founded Holmes, Booth and Haydens in 1853; Anson G. Phelps, who with Thomas Wallace formed the Ansonia Branch of the American Brass Co., originally known as Wallace and Sons and Ansonia Brass and Copper; and still others who were associated with Israel Coe and Israel Holmes in the founding of the branches of the company. It was, however, Charles F. Brooker, President of the Coe Brass Co. who was largely responsible for the consolidation of the several units into the American Brass Company and who became its first president. (Continued on page 23)

NEWS FORUM

Bristol's New Valve. The new Sychro Diaphragm Motor Valve, recently placed on the market by the Bristol Company, Waterbury, Conn., has been characterized as a most outstanding contribution to the art of automatic control. Intended primarily for use on air operated control systems, it responds immediately, as its name implies, to air pressure changes, and the stem position for a given pressure is the same whether pressures are rising or falling. Correct design of the rubber diaphragm and top, precision measurements in the manufac-



Bristol Company's
New Sychro Valve

ture and assembly of the stem guides, accurate alignment and proper spring construction make possible the accomplishment of the features previously mentioned including the elimination of friction loss in the top movement.

Construction features provide ample space for renewing stem packing without disturbing the adjustments and permit top to be renewed or the spring replaced without changing the setting of the spring follower, thus greatly simplifying maintenance and servicing of the valve. Union and valve

bodies of either V-port or single seated construction are available with body material and trim to meet the demand of almost any industrial process.

Increase in Government Employees. According to a recent report, "Employees In Government Service", published by the National Industrial Conference Board on May 11, the total number of employees of federal, state and local governments has increased from 2,618,000 in 1922 to 3,122,000 in 1932, or 19.3%, during which period the total population of the country increased but 13.6%. Government employees accounted for 9.1% of the full time jobs available in 1932, or for one full time job in eleven. That the United States is becoming more bureaucratic and is steadily moving toward the point when government employees will hold the balance of power at the polls, is the unmistakable evidence set forth in this most complete report, which is broken down into separate discussions and tables relating to federal, state and city employees, increase in employees and compensation of employees in government service in 1932.

Stanley Works Electrify Toy. Stanlo, the new construction toy which may be built up from its constituent parts of butts and hinges into a garage, an auto truck to go into it, a skyscraper or almost any imaginable type of building, was electrified at the recent annual Toy Fair and given the new name of "Stanlite". Introduced for the first time last year by the Stanley Works of New Britain at the Chicago Exposition, it was acclaimed by certain leading toy buyers as the most revolutionary mechanical toy offered on the market in the past seventeen years. Encouraged by the popularity of last year's models, the company provided the new feature for this season's business, which is a complete electric lighting unit with which any boy can wire and electrically light any of the models which he builds from "Stanlo". An additional new feature for the 1934 lines is special sets built distinctively for the boy who has electric trains, permitting him to build railroad stations, roundhouses, bridges, signal towers, etc. "Stanlo" sales headquarters and permanent show rooms are located in room 407, 200 Fifth Avenue, New York, from

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which a toy selling organization composed of specialty men, is covering all sections of the country.

★ ★ ★

Huge Tank to Spain. The Whitlock Coil Pipe Company of Hartford, has just completed fabrication of a huge steel vacuum chamber, measuring 6 feet in diameter by 52 feet in length, weighing 24,000 pounds, which has just been shipped to Malaga, Spain, for fumigation of tobacco. The interior has a track on which large trucks are run in through one end and out the opposite. Each truck will accommodate two hogsheads of tobacco each weighing about 1,000 pounds and five tons can be vacuum fumigated at one time by closing the hinged doors on each end and pulling with a vacuum pump until a vacuum of 28 inches is reached. A charge of hydrocyanic gas is then inserted through a steam volatilizer. Exposure for two or three hours completely sterilizes the tobacco and likewise may be used to sterilize cereals, thus completely eliminating future deterioration without impairing the taste or quality of the product.

★ ★ ★

Fire in Shelton. A spectacular blaze that shadowed the sky with a crimson glow for miles, swept through the factory formerly occupied by Hemming-Walsh Cutlery Mfg. Co., Myrtle Street, Shelton, Conn., on the night of June 14. The factory had been vacant for several months. Damage was estimated at approximately \$40,000.

★ ★ ★

Spider Boat Company Formed. The Aerodynamic Boat Corporation, recently organized with William H. Mortensen, director of the Horace Bushnell Memorial, as treasurer, and Thomas Lake, son of Simon Lake, as president, will soon be selling a new built spider-like boat of aerodynamic design, capable of speeding 60 miles an hour with four to six passengers on board. This revolutionary new type of boat is little more than a fuselage supported on three pontoons and when built in racing models, may be expected to equal, if not exceed, the world's records of more than 125 miles an hour, according to Mr. Lake, who has broad design patents on the construction features. Although 40,000 shares of stock have been authorized, it is understood there will be no public offering and

no plant construction, but the hulls will be made under contract. According to Mr. Lake, both commercial and racing models will be made from \$1,000 up.

★ ★ ★

Hockanum Sold. The Hockanum Mills Co. of Rockville, Conn., one of the oldest and largest manufacturers of high grade woollens for clothing cloth was recently sold to M. T. Stevens & Sons Co., of North Andover, Mass., who will operate it as a separate unit. The Hockanum Co., capitalized at \$6,000,000, is headed by F. T. Maxwell, president; William Maxwell, secretary-treasurer; and Percy Ainsworth, general manager. The company, founded in 1809, has five mills in Rockville.

★ ★ ★

Kimball Made Code Chairman. Arthur G. Kimball, president of Landers, Frary & Clark, New Britain, was recently elected chairman of the Code Authority for the Cutlery, Manicure Implements and Painters and Paperhangers Tool Manufacturing and Assembling Industry, a division of the Fabricated Metal Products Industry.

★ ★ ★

Thieme Heads Brewery. Otto Thieme, former works manager of the Underwood Computing Machine plant in Hartford, was recently elected president of the reorganized Connecticut Valley Brewing Company of Meriden. Estimated capacity of the brewery, which was formerly occupied by the Meriden Brewery Company, is 100,000 barrels annually. Besides Mr. Thieme, Fred B. Griffin, Hartford tobacco grower; Berkley C. Hills of Danbury; former Congressman John Q. Tilson of New Haven and Arthur J. Adler of New York, were named directors.

★ ★ ★

Hartford Light Company Wins Medal. The Coffin Medal for 1933, symbol of leadership and distinctive achievement in the light and power industry last year, was awarded on June 7 to the Hartford Electric Light Company. The medal was presented for the Edison Electric Institute by Frank W. Smith, head of New York Edison Company and chairman of the awards committee, to Mr. Samuel Ferguson, president of the Hartford Electric Light Company. Under the terms of the Charles A. Coffin Foundation, as established by the General Electric Company, the award was made "to the



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company which during the year 1933 made the most distinguished contribution to the development of electric light and power for the convenience of the public and the benefit of the industry".

★ ★ ★

Parker Gun Sold. The business and associates of Parker Brothers of Cherry Street, Meriden, manufacturers of the Parker Gun, was acquired on June 1 by the Remington Arms Company. It is understood that the plant will be continued in operation.

★ ★ ★

Gill Added to Board. Edward E. Gill, general production manager and manager of the Bristol plant of the New Departure Manufacturing Co., was added to the board of directors of the company at the annual meeting held on June 1. All other board members were re-elected as follows: DeWitt Page, Adrian P. Sloan, Jr., J. L. Pratt, C. M. Gearing, M. L. Prentis, Charles S. Joy, A. C. Hitchcock, Charles R. Anderson, Frederic G. Hughes, M. L. Gearing, Lester G. Sigourney and E. E. Gill.

★ ★ ★

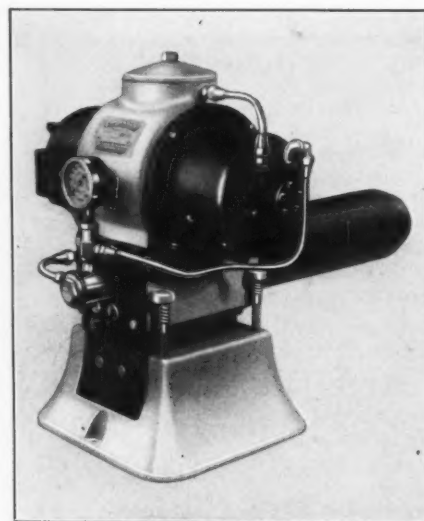
H & W Taken Over by Connecticut Concern. The Henry & Wright Manufacturing Co., a Connecticut corporation, has recently acquired physical assets and good will of The Henry & Wright Manufacturing Company, a Massachusetts corporation, and is now manufacturing all lines of machine tools and presses. Frank K. Simmons, former president of the Massachusetts corporation and later its receiver, has been made president of the Henry & Wright Manufacturing Company, Connecticut corporation. H. H. Hilliard has been elected treasurer of the new corporation. The company manufactures automatic power presses known as the Henry & Wright Dieing Machines, as well as a complete line of general purpose presses of welded steel construction, and the Henry & Wright Sensitive Drilling Machine. Within the past year a new line of Automatic Feed Welded Steel Presses was introduced.

★ ★ ★

Hartford Heat Unit. The new Super-Heet Oil Burner, manufactured by Super-Heet Burner Corporation, of 1200 Park Street, Hartford, Conn., affords an arrangement on the assembly that is unique because of its balance and its unusually

artistic appearance and design. It is finished in vitreous porcelain baked on at 1450 degrees, guaranteeing a good appearance over a long period. The mechanical unit consisting of the blower housing, air tube, motor and other mechanical parts are supported by four springs mounted on the base, giving it a complete floating action, which is of assistance in eliminating motor noises and mechanical shocks that may be present in the equipment. The Super-Heet is actually an oil burner with many new features which can be installed in either a small boiler with a grate of less than 12 inches in diameter or in a large boiler heating 2500 feet of direct steam radiation. In the former instance one gallon per hour is the estimated oil consumption and in the latter, eight gallons per hour.

★ ★ ★



Super-Heet Oil Burner

Diesel in Waterbury. The F. Pepe Macaroni Co., Inc., Waterbury, Conn., has recently contracted with Wolverine Motor Works, of Bridgeport, for a 60 Kilowatt Diesel driven electric generating unit, to provide power and lighting for its factory.

(Continued on page 31)



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Accounting Hints for Management

Contributed by Hartford Chapter N. A. C. A.

Depreciation Allowances—Equipment Records. The broad scope and far-reaching effect of the recent Treasury Department Decision on the subject of allowable depreciation for income tax purposes (TD 4422) has probably been impressed upon all industrial concerns by this time through trade publications, appraisal companies' literature and current examinations by internal revenue agents. Supplemental instructions by the Income Tax Bureau have helped to clarify and to impress what is expected of taxpayers. The burden of explaining, justifying and substantiating the amount claimed has been placed squarely upon the taxpayer, "taxpayers must furnish full and complete information."

Notwithstanding the inconvenience it will cause many taxpayers to prepare the detailed schedules required, the decision is fundamentally sound and should have a salutary effect upon the accounting for machinery, equipment and other fixed property accounts. Many industries that operate most minute perpetual inventories for materials and supplies have been content to record on their books large additions to the fixed asset accounts in one net figure for the period. The new regulation requires in effect that the depreciation deduction claimed must be identified with specific machines or equipment, or with groups thereof which are of similar description, life and service. Accrued depreciation as carried on the books must be specifically identifiable. The day of reckoning has arrived when the mystery of the "Reserve for Depreciation" must be cleared up.

One important aspect of this new regulation is that it is retroactive to all taxable periods which have not been definitely closed. For the most part this will apply to the two most recent returns filed. Earlier returns held open for any reason whatsoever will likewise be subject thereto.

It is extremely desirable for taxpayers to act at once to determine how the application of this regulation will affect their interests. This is particularly true for those who have reported net losses during the past two or three years. A proper reduction in the amount of depreciation taken will reduce the reported net losses, and project such amounts as possible future deductions the usefulness of which might otherwise be lost. It is not advisable to await an examination by the Internal Revenue Department, as many returns indicating substantial operating losses have never been examined by the Department.

The desirability of equipment records has been suggested in this column on several occasions. Such records now become a necessity. A separate card or ledger sheet should be prepared for each machine to constitute an Equipment Register, show-

ing date and cost of acquisition together with all pertinent and accumulated data. This record will also be found to serve many other useful administrative purposes.

Transportation

Old Dominion Freight Transfer. As a result of the recent close cooperation of Mr. George Marks, assistant general manager of the New Haven Road and Mr. J. L. Ridley, assistant general freight agent of the Eastern Steamship Lines, Inc., freight transfer service at New York on freight handled by the New England Steamship Company, destined to points in the west, southwest and southeast via the Old Dominion Line, has been 100% "on date of arrival" at the Port of New York since the early part of June. Previously a large number of shipments handled by the New England Steamship Company and routed via the Old Dominion Line from New York to Norfolk were given handling at New York on the day following shipment from Connecticut, thus resulting in a full day's delay. Insistent demand on the part of shippers has resulted in the inauguration of a new method of transferring shipments from the New England Steamship Company dock in the less than five hours' time available on the date of arrival, thus affording a most attractive service.

The Old Dominion Line of the Eastern Steamship Lines, Inc., connects at Norfolk with all carriers serving that port, operating south or west-bound and through rates are in effect to most stations throughout central, western, southwestern and southern territories.

Extend Truck Code Compliance. An extension of the grace period for code compliance by members of the Trucking Industry was granted on June 18 by National Recovery Administrator, Hugh S. Johnson. He ordered that the time for registration of trucks be extended to June 28; that the date for display of registration insignia be moved forward to July 13; and that the time within which elections of members of the national, regional and state code authorities must take place, be extended to July 28.

Bennett Made Connecticut Company Manager. Richard J. Bennett, assistant general manager of the Connecticut Company since 1925, was made general manager of the company, assistant to the president of the Springfield Street Railway Company, and assistant to the president of the Berkshire Street Railway Company. It is understood that this move was made to give Mr. J. K. Punderford, president of all three companies, freedom to

devote all his time to executive duties. Mr. Bennett has had an unusually broad experience in the transportation business, being familiar with every phase of the operation of street railways and bus properties. His promotion places him in charge of local passenger and express facilities which furnish transportation to nearly the whole state of Connecticut.

Traffic Headquarters to Boston. On June 1, the headquarters of Mr. F. J. Wall, vice president in charge of traffic, of the New Haven road, were moved from the Yellow Building to Room 484, South Station, Boston. It is understood that the transfer to Boston affects only 25 to 30 persons, the remainder of the approximately 100 officials and employees of the traffic department remaining in New Haven. The transfer was attributed to competitive traffic situation.

Intercoastal Group May Dissolve. Possibility of dissolution of the United Intercoastal Steamship Conference was recently seen following the action of five of the twelve members who filed notice of withdrawal last month because of the action of the Conference in denying membership to the California and Eastern Steamship Line. The Quaker Line of Seattle, which controls the California & Eastern, led in giving the required sixty days' notice of withdrawal, being followed by four other companies whose names were not disclosed.

Foreign Trade

Peek Points to Possible Loss in Foreign Trade. George N. Peek, foreign trade adviser, reported to President Roosevelt last month that the net result of U. S. trading since 1896 was a paper profit of \$22,645,000,000 which has not yet been paid in cash. The total includes \$10,304,000,000 of war debts still owed to the United States. Unless these sums are paid, Mr. Peek pointed out, the foreign trade as a whole for the thirty-eight year period will represent a loss materially diminishing the national assets rather than a profit in the event they are paid.

Shanghai Dollar Directory. The next issue of the Shanghai Dollar Directory, published twice each year and giving a complete alphabetical list of firms doing business in the City of Shanghai, China, will be ready for distribution about July 1. The alphabetical list gives the Chinese name and Romanized spelling; cable address and post office box number; address and telephone number; business engaged in; members of firms and positions; and foreign firms represented.

Subscription for next two issues is \$2.00 or for a three years' subscription is \$5.00. Address of Shanghai Dollar Directory is 17 Avenue Edward VII, Shanghai, China.

Killing Exports. Fact is that the export banks to date have been a minus quantity since the ballyhoo regarding the assistance it would give to exporters. It has thus far merely served to stimulate such competitors as Germany, Italy, France, England and other countries into taking away what is left of our foreign markets. While the state department fiddles with many bargaining projects, the hands of George Peek are tied and foreign agents of our heavy industries pace nervously back and forth in their offices waiting for the export bank to take over the credits which are obtainable on certain heavy machinery items as soon as satisfactory credit can be extended.

German Trade Directory. A new trade directory listing over 1,000 American firms with branches or affiliations covering the German market including important information of leading German banks, newspapers, chambers of commerce, industrial and commercial organizations, is available through the Board of Trade for German-American Commerce, 230 Fifth Avenue, New York City. The price of "A Handbook of Useful Information" published by Albert Degener, secretary of the board of trade for German-American commerce, is \$3.00.

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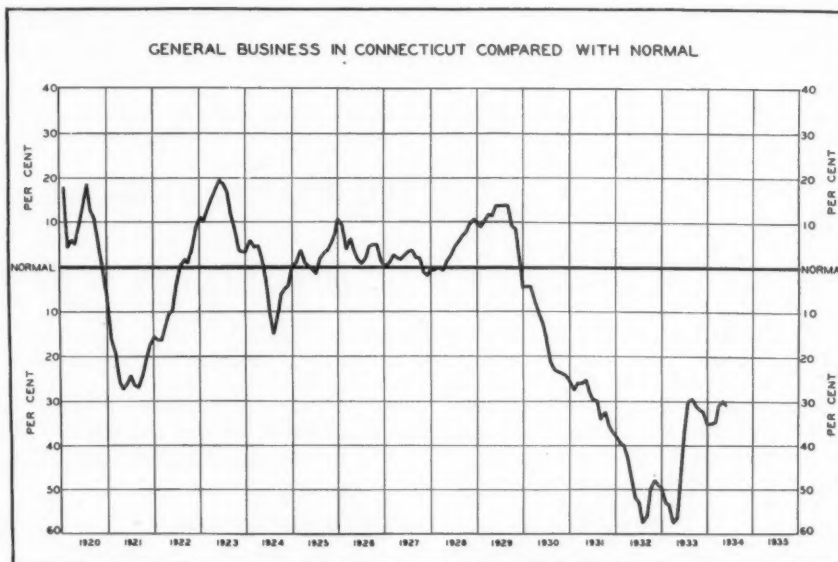
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BUSINESS PATTERN

General Summary. During May, general business in Connecticut experienced a general but moderate decrease in activity, this being the first downturn since December. The composite index of business activity in Connecticut stood at 31% below the estimated normal in May compared with 30% below in April. Small reductions took place in both the total number of man-hours worked in factories in five cities and the total number of factory employees in manufacturing establishments in ten cities. Several cities, however, reported increases in activity over April. Freight car-loadings again fell off rather markedly. Activity in cotton textile mills and bank

Small increases took place in electric power production, cotton consumption, silk consumption and zinc production, while decreases occurred in freight car-loadings, lumber production, boot and shoe production and automobile production. The decrease in the output of automobiles was considered to be largely the result of a curtailed demand arising from price increases instituted early in April. A reduction in prices effective in the first part of June has been the occasion of a renewal in demand with a consequent rise in production. Effective June 4, production of cotton textile mills was limited to 75% of production for a period of twelve weeks.



debts to individual accounts in three cities remained unchanged from the preceding month and the volume of metal tonnage carried by the New Haven Road rose decidedly over April. Data covering the first part of June point to a further slight abatement in the rate of business activity; freight car-loadings on a daily average basis were somewhat lower than in May whereas, usually, a faint seasonal advance is discernible; and employment and the number of man-hours worked in factories in one city persisted on the downward course that has been apparent since the end of April.

Contrary to the trend in Connecticut, general business in the United States continued to advance although the increase in the composite index was accompanied by a decided diversity in the movements of the component items. Steel mills and pig-iron foundries, for reasons mentioned in our May report, stepped up production to a level above that of April.

Wholesale prices since the middle of May have risen materially coincident with the prolongation of the drought in large areas in the mid-west. On June 12, according to the weekly index of The Annalist, wholesale prices of farm products were 7% higher than four weeks earlier and food prices at wholesale had advanced 4%. Fuels, due to higher prices for anthracite coal, rose 2% in price, but other commodities failed to exhibit any noticeable change in trend during the four week period. Retail prices were higher in May than in April but, compared with the high level reached in October, 1933, the index of the cost of living had increased less than one per cent. May increases over the preceding month were confined to small advances in the price of foods and rent.

Financial. During the four weeks ended June 9, the number of business failures in Connecticut

dropped off approximately 6% from the corresponding period a year ago. Net liabilities of failures were substantially less than a year earlier. New corporations formed decreased 34% in number and 38% in the total capitalization compared with last year. Real estate sales, although remaining at the level of the preceding four weeks were 6% fewer than in 1933, whereas the total value of mortgage loans approximately doubled the earlier years' record.

Construction. The upward-trend in building activity in Connecticut experienced during the Spring persisted during the first part of June. The total number of building permits issued during the four weeks ended June 9 exceeded last year's total by 13%, whereas the total value rose 38%. Two large contracts, each for about \$100,000, were awarded late in May and covered a new grade school building in Old Lyme and alterations to a gymnasium and a new squash court building in Middletown.

Building activity in the United States increased in May contrary to the seasonal trend. Contracts awarded for new residential building were moderately higher than in April. Contracts for new public works were sharply reduced but other non-residential building expanded abruptly. On June 18, the Federal Congress sent to the President for his signature a bill which provides that the government may guarantee up to one billion dollars for private loans for the building of new homes. The government will guarantee as much as 100 per cent of mortgages on 80 per cent of the home's value. It is expected that as a result of the enactment of this bill, the volume of residential building will be considerably increased.

Labor and Industry. During May, industrial activity in Connecticut factories was somewhat more than seasonally reduced from April, the index of man-hours worked declining to 32.6% below normal compared with 31.4% below in April and 51.4% below a year earlier. The number of man-hours worked in Bristol and Meriden fell off seasonally, but in New Britain and Bridgeport relatively large decreases occurred. In New Haven, activity increased contrary to the normal seasonal tendency. The index of factory employment in Hartford and Waterbury was off fractionally between April and May, the decreases reported by Hartford concerns slightly more than offsetting increases in Waterbury plants. In Torrington, factory employment advanced for the fifth consecutive month. In Danbury, business was adversely affected by strikes called June 11 and involving roughly 1000 workers; the difficulties have not yet been settled. In Bridgeport, a strike of some 300 employes was called June 12; increases in wages and piece-work rates were asked.

Trade. Retail trade was well maintained in May. This was at variance with preliminary reports which indicated a considerable abatement in trade. The index of sales by department stores stood at 75% of the 1923-25 average compared with 77% in March and April.

Transportation. Freight car-loadings originating in Connecticut cities continued on the wane for the second consecutive month. During the four-week period ended June 9, car-loadings had fallen to a level 9% below the corresponding period of 1933.

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BRASS AND COPPER

(Continued from page 15)

The company's present annual capacity is over 500,000 pounds which include of the items previously mentioned under the heading of "Products and Their Uses" as well as thousands more. Like Scovill, finished product manufacture is done on a job lot basis for other concerns who market them under their own trade marks. However certain mill products like sheets for building of roofs are marketed under their own trade names as Anaconda "Electro Sheet".

The company maintains a technical service for advising customers on the correct alloy to use under a given circumstance. The company has branch offices in 14 principal cities.

The present officers of the company are: John A. Coe, president; Clark S. Judd, vice president; Clifford F. Hollister, vice president, secretary and treasurer; M. W. Judge, assistant treasurer; S. B. Terry, assistant treasurer.

The Chase Companies, Inc.

The third of the large Waterbury group is built around the accomplishments of the Chase family. The ancestry of the company, however, dates back to the founding of "Hitchcocks" in 1837, later known as the U. S. Button Co. which became in 1876 the Waterbury Mfg. Co. when the button company was incorporated by Mr. Augustus Sabin Chase. Mr. Chase, who was born in Pomfret in 1828 of original Puritan parents, first entered business as a banker with the Waterbury Bank in 1850. But after becoming president of the bank in 1864 he became president of Benedict & Burnham and was the first president of the Waterbury Mfg. Co., as well as an official of several other Waterbury companies.

The Waterbury Mfg. Co., which at one time produced as many as 34,000 products of brass, copper and other related alloys became such a large user of mill shapes that by 1900 the Chase Rolling Mill was built to supply the demand, but later as its production increased gradually entered the market with Chase brass sheet, rod, wire and tubing.

In 1910 a second brass mill was built, the Chase Metal Works, which is today one of the largest and best equipped mills in the country. In 1917 these three companies were merged as the Chase Companies, Inc. Four years later a warehousing system was started which, with the acquisition of the U. T. Hungerford Brass and Copper Co., also operating warehouses in principal cities, became what is believed to be the largest and most complete brass and copper warehouse system in the world. The Chase and Hungerford systems were set off as separate selling and distributing corporation, the Chase Brass and Copper Co., Inc.

In order to give better service to the midwestern market, a large new Chase Brass and Copper plant was built at Euclid Village, Cleveland, Ohio, at a cost of around \$6 million. In 1929 the Chase Com-

panies were acquired by the Kennecott Copper Corp., which brought into being the second "mine to consumer" brass and copper organization.

About 1930 the Chase Brass and Copper Co. started to manufacture brass and copper giftwares both in chromium and natural color, and it was through this effort that a trend has been set toward this type of giftware for the home. It is marketed direct to retail gift shops and gift shops of department stores in practically every city and town in the U. S.

Most recent of Chase's consumer lines, is lighting fixtures which were designed independent of all other lines by a nationally known designer. The line which is sufficiently complete to cover the range in practically all period styles from the earliest through to the modern has applications in all types of houses from a humble cottage to a mansion. These fixtures which have just been introduced this year being advertised to architects, decorators and lighting fixture dealers through trade publications, are to be advertised nationally starting in July. They are sold exclusively by Chase dealers and may be purchased by responsible home owners on the deferred payment plant.

As indicated, the Chase organization differs from the other two large Waterbury concerns in that it has been wholly controlled by one family with A. S. Chase, the founder; and H. S. and F. S. Chase, his two sons, as expanders of the business. It is also the only one of the three companies which markets consumer products under its own name.

Present officers of the company are: F. S. Chase, President; R. L. Coe, Vice President; R. O. Ely, Treasurer; C. E. Hart, Secretary; and Rodney Chase, Asst. Secretary, and Advertising Manager.

Bridgeport Brass Company

In cooperation and with the financial assistance of Mr. John Davol, formerly associated with the Wolcottville Brass Co. and Brooklyn Brass Co., and his son, William H., the principals of the Wilmot and Kissam Manufacturing Company of Brooklyn, raised the capital of \$150,000 and incorporated the Bridgeport Brass Company November 2, 1865. Mr. John Davol was made president, Mr. Wilmot treasurer and Mr. Kissam secretary. This company, which was destined to rank as No. 4 Connecticut producer of brass mill products, has remained constantly abreast of new developments having a bearing on the brass industry.

Starting with the manufacture of brass clock movements as its principal product, it later entered into the manufacture of kerosene lamps and lanterns. The company had a tremendous sale of the "New Rochester" Lamp, the manufacturing rights for which it held throughout the heyday of oil burning lamps. The company also developed the first successful kerosene bicycle lamp which was exhibited at the Chicago World's Fair in 1893.

The next evolution started production of sockets for incandescent lamps. After the death of Mr. John Davol in 1878, which was also the year the company sold its clock business to the Ansonia Brass & Copper Company, Frederick A. Mason purchased Mr. Davol's interest, and in 1880 became its vice-president and treasurer. During the next decade before his retirement, he placed the company on a firm foundation.

What would be considered today as a great curiosity was a mechanical revolving fan operated by clockwork—Lambeth's Fly Fan, the real granddaddy of the electric fan. It was made by the company and was the first mechanical device of this type to gain favor.

In 1883, Thomas B. Doolittle, formerly in the employ of the Bridgeport Brass Company and who had later made a number of improvements in the details of operation and installation of telephones, was instrumental in placing an order with his former employers for drawn copper wire, which was strung by the Southern New England Telephone Company for the American Bell Telephone Company in the spring of 1884. It was the first long distance telephone line between New York and Boston. So successful did this new copper wire prove that it has since displaced iron wire for distance telephone lines.

Other early products of the Bridgeport Brass were condenser tubes, first used in U. S. battleships and later by power plants; printers' rules, block brass, galley plates, and finally engravers' copper; "Phono-Electric" Wire for trolleys and later for railroad electrification projects. (Wire developed by Aluminum, Brass and Bronze Company, which formerly occupied the property now covered by Bridgeport Brass Rolling Mill—a combination of alloy wire which combined conductivity, high tensile strength and wearing qualities, which were two to four times greater than that of ordinary hard drawn copper.)

Since 1900, the Bridgeport Brass has constantly expanded its plants and products, the latter including broad classifications as follows: Sheet, rod and wire, seamless tubing and pipe in brass, bronze, copper and duronze, a high tensile strength alloy; special rod and wire alloys, special tubing mixtures, special pipe fixtures for plumbing, manufacturers' goods such as traps, bends, supply pipes, shower curtain fixtures, etc.; and manufactured goods made to order such as metal bellows for temperature control, shaft steel, electric refrigerator parts and miscellaneous stampings.

The company is well known for two of its famous Firsts, the first crude micrometer designed by F. R. Wilmot, then superintendent of the Bridgeport Brass; and the electric furnace method of melting brass and other alloys. This latter development was due to Mr. W. R. Webster, then vice-president but now chairman of the board, who caused experiments to be made in 1916 with an electric furnace designed by a Philadelphia inventor. These experiments led to adoption of this superior method of melting brass over the old pit furnace and oil burning furnace methods, the first of which had previously been used for thousands of years. Since that

time practically all of the larger companies have adopted the electric furnace method.

Present officers of the company are: W. R. Webster, chairman of the board; R. E. Day, president and general manager; H. W. Steinkraus, vice-president in charge of sales; E. S. McClary, secretary and treasurer; L. M. Allen, assistant treasurer; W. R. Breetz, assistant secretary.

The Bristol Brass Corporation

As previously mentioned, The Bristol Brass and Clock Company, which later became the Bristol Brass Corporation, was organized by a group of men led by Israel Holmes, who had been interested in the manufacture of brass clocks by the Wolcottville Brass Company. Doubtless they were prompted by the ready sale of brass clocks to start a plant which, under one roof, would be a self-contained unit producing sheet brass and subsequently manufacturing it into clocks. From the date of organization, April 3, 1850, until 1890 the company rolled little more brass than was consumed in the factory for the manufacture of clocks. In the next decade a considerable quantity of sheet brass was sold. Rod and wire manufacture was started about 1900 and brazed tubes in 1901.

The company's original board of directors included a number of famous names in the history of brass manufacture, namely: Israel Holmes, John P. Elton, Philo Brown and L. W. Coe. Other directors were E. N. Walsh, E. G. Brewster, J. T. Brown and Elisha Manross. Israel Holmes was the company's first president and L. W. Coe the first secretary and treasurer.

Like most companies which started in that early day, water was used for power and wood was the fuel used in tempering. Later when the blight struck the chestnut tree it became necessary to find another method of tempering. It was at this time that the oil fired furnaces first came into general use. Steam then electricity followed water as the company's source of power. Likewise, it was one of the early leaders in the development of the extrusion process for making rods and was one of the first after the Bridgeport Brass to equip its plant with electric furnaces by which the major part of the metal is now melted.

The present modern plant located at the east side of Bristol, covers 8 acres and has a capacity of approximately 4,000,000 pounds of brass and bronze per month. Except for an extremely dull period caused by capital expenditures for expansion during the war period, the company has continually progressed until it is now completely modern in every respect. The chief products of the company which are distributed for the most part in the New England district are: Sheet, rod, wire and brazed tubing in a wide range of sizes and tempers. Specialties of the company are rivet and screw wire and welding rods; low gauge brasses for automobile radiators and low brasses for use in vanity and cigarette cases, etc.

Present officers of the company are: Alexander Harper, president; A. D. Wilson, vice-president and treasurer; Charles T. Treadway, vice-presi-

Making the name



famous

THE BRIDGEPORT BRASS COMPANY was organized in 1865 by a group of men long experienced in the brass business. Beginning in a modest way by making brass mill products such as sheet, rod, wire and seamless tubing, the company gradually took on the manufacture of articles from brass until now it is one of the most completely integrated independent brass companies in America.

¶ As inventive genius has brought forth ever new and popular articles, this company has co-operated with most of the well known manufacturers, either by supplying them with suitable mill products, or by making up stampings, cups, deep drawn shells or completely finished articles stamped with the manufacturer's name.

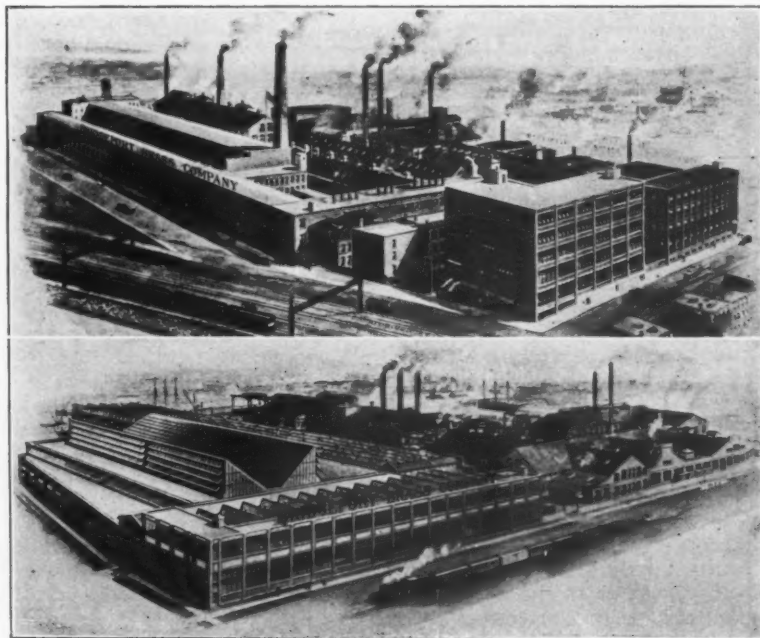
Plants of The Bridgeport Brass Co., at Bridgeport, Conn.

SOME NOTEWORTHY



PRODUCTS

*Ledrite High Speed Brass Rod
Plumrite Brass & Copper Pipe
Bridgeport Copper Water Tube
Phono Electric Trolley Wire
Duronze Silicon Bronze Alloys
Sheet, Rod, Wire, Seamless
Tubing
Plumbers' Brass Goods
Metal Bellows For Temperature Control
Automobile Tire Valves
Manufactured Goods to Order*



**BRIDGEPORT BRASS COMPANY
BRIDGEPORT, CONNECTICUT.**

dent; Harry N. Law, secretary; and Carl A. Gustafson, assistant treasurer.

The Seymour Manufacturing Company

Organized as a co-partnership in 1878 by W. H. H. Wooster, H. D. Wooster and Ira E. Clough, the company built a small mill and engaged in the manufacture and sale of copper, brass and German silver (now nickel silver) in various forms. In 1880 the company was incorporated with capital stock of \$30,000 and purchased outright the interest of the original partners.

First officers of the new company were: Charles H. Pine, president; W. H. H. Wooster, treasurer and Letsome T. Wooster, superintendent.

So satisfactory were the company's products that plant expansion and four capital increases were made from 1880 to 1915 which brought the capital up to \$1,000,000. During the war the company was conducted in an able manner by W. H. H. Wooster as president, during which time the mills were largely devoted to the manufacture of brass cartridge case discs, copper rings and cupro-nickel, as well as nickel silver in large tonnages for use in the manufacture of army and navy equipment. After the death of Mr. Wooster in December, 1919, George E. Matthies became president and treasurer, a position which he held until his death in April, 1922. To him is credited the rapid growth and success of the company which was practically reconstructed and modernized in 1919. Today it is one of the most up-to-date plants in the country covering about eight acres of ground and employing, when running to capacity, about 600 people. The company specializes in the manufacture of nickel silver and phosphor bronze in sheet, wire and rod, as well as nickel anodes, having an annual productive capacity of approximately 25,000,000 pounds.

Present officers are Franklin S. Jerome, president; O. F. G. Boeker, secretary; B. H. Matthies, treasurer and H. A. Leigh, assistant treasurer.

New Haven Copper Company

Founded in 1849 as the Humphriesville Copper Company because investigation by Raymond French showed there was money to be made in rolling copper sheets, it started cold rolling of copper in a small plant on its present site near the center of Seymour, which was said to have been purchased originally in the 1600's from Indians with "plug tobacco and whiskey". The original capital of \$40,000 was subscribed by S. C. Johnson and the first president of the company was J. W. Dwight.

According to Sharpe's History "Seymour and Vicinity", published in 1878, a very substantial profit was made in the manufacture of cold rolled copper sheets until after the first reorganization in 1852 which increased the capital to \$200,000. From that time on profits and the value of the stock dwindled as the capital structure increased. In the reorganization of 1855 the name was changed to the New Haven Copper Company. In the reorgan-

ization of 1872 the James family took over control, and held it until 1923 when it was taken over by the Calumet and Hecla Copper Company for debts, later being acquired at private receivers' sale by John H. Ballantine, a New York financier.

Since 1925 when Mr. L. R. Clapp came into the company as vice-president and general manager, the mill has been reorganized and modernized, both in plant and equipment, gradually regaining much of its former prestige. According to a company official, its chief claim to fame is that it was the first plant to roll copper on a new style backed-up mill which was previously used exclusively by steel mills. Now, as in 1849, their basic product is sheet copper made in all gauges, lengths and tempers for a wide variety of uses.

Other officers are John H. Ballantine, president and treasurer and John E. Searle, secretary.

The Plume & Atwood Mfg. Company

Organized originally by Israel Holmes, John C. Booth and John C. Atwood as Holmes, Booth & Atwood in 1869, the name was abandoned by order of the court on account of its resemblance to the older association of Holmes, Booth & Haydens, and in 1871 became Plume & Atwood. Almost immediately after organization the company purchased the Thomaston Manufacturing Company, a brass mill in Thomaston, which had been organized in 1854 to roll metal for the making of brass clocks, and also a smaller concern in Waterbury, starting the manufacture of kerosene lamp burners. Later it became the largest manufacturer of the "Rochester" type kerosene lamps under various trade names, and since then has manufactured lighting equipment for each new development until now it is one of the largest manufacturers of commercial and home lighting equipment in the country. After lamps, the line of products was subsequently enlarged to include small hardware such as rivets, butts and hinges, and after 1908 when it acquired the Howe Manufacturing Company, Plume & Atwood became a large producer of toilet pins. More recent competitive conditions have caused the company to employ steel as a base metal, plating it with brass to form some of its lower priced lines.

Plume & Atwood is believed to have been the first company which used electricity to drive its rolling mill, having used its own steam turbine first to generate electricity about 1890 to 1895. It remains today the largest manufacturer of kerosene lamps, selling more of them to foreign countries, such as South America, England, Australia, Canada, Italy, etc., than in the United States.

Present officers of the company are: Ralph L. French, president, treasurer and general manager; S. Kellogg Plume, vice-president; John L. Scott, secretary and assistant treasurer.

The Thinsheet Metals Company

A growing demand for thin gauged metals caused H. T. Cross and J. L. Rigney of Waterbury to organize the company in 1919 to roll brass, copper and numerous other alloys into gauges as thin as

(Continued on page 30)

THE AMAZING GROWTH OF AN ORIGINAL CONNECTICUT INDUSTRY

In 1823, Aaron Benedict, who operated a tiny bone and button shop in Waterbury, Connecticut, imported a pair of 30 inch steel rolls from England and started to roll sheet brass for the fabrication of brass buttons.

From those first, crudely wrought brass buttons has grown The American Brass Company, the world's largest producer of copper and brass products.

Curiously enough, The American Brass Company of today does not make brass buttons. It does, however, manufacture copper, brass, bronze, nickel silver, and special copper alloys in all commercial forms of plates, sheets, rods, wire, tubes, special extruded and drawn shapes, hot pressed parts and pressure die castings. In the past year it has rolled the record size condenser head plates, huge circles 21 feet in diameter and weighing 18,000 pounds; and has drawn seamless tubing with an inside diameter too small to admit the passage of a human hair.

Anaconda research engineers work under the theory that "there is one best metal for every purpose", in their study of customers' requirements. If copper or a copper alloy will best meet the requirements, it is produced in forms of uniform dependability by American Brass Company mills.

THE AMERICAN BRASS COMPANY



GENERAL OFFICES: WATERBURY, CONN.



Silverware

By L. M. Bingham

ED. NOTE. On account of space limits in the June issue, the entire story of Silverware developments in Connecticut could not be told last month. The following are brief historical sketches of seven companies not previously mentioned.

The Williams Bros. Co.

The American Sterling Co. of Glastonbury, Connecticut, was sold at auction in 1878 and J. B. Williams of the J. B. Williams Co., makers of shaving cream and lotions, was the buyer. With his brother Wm. S. Williams, he organized the present company in 1880 with a number of prominent manufacturers, including the Maxwells of Rockville (owners of Hockanum Mills) to furnish employment for jobless silversmiths in Glastonbury.

Starting with a line of silverplated flatware and unplated cutlery including the Cocobolo line (no relation to Boola-Boola) of bone handle cutlery, it has continued through the years to produce the same type of products, with numerous additions to its patterns. Over 50% of its product moves via department chain stores and the remainder through jewelry stores.

Buying their metal in blank, ungraded, Williams Bros. fabricate from patterns produced by their own designers. High point in business career was in 1917. Present average employment is around 120 and company ranks about 4th in volume of production in Connecticut. Present head of the company is George H. Pinney.

American Silver

In 1853 Holmes and Tuttle started the manufacture of brass and nickel silver spoons and forks, etc., in Bristol, buying their metal from the Bristol Brass Co. which had been started in 1850 by Elisha N. Welch with others from the Naugatuck Valley.

In 1857, on account of a panic and as Holmes and Tuttle were heavily indebted to the Bristol Brass Co. for a large sum, arrangements were made with the Bristol Brass Co. to take over the entire business in payment of indebtedness. It was then run as the Silverware Department of the Bristol Brass Co. until the year 1901 when it was incorporated under the Connecticut State Laws as The American Silver Company. A new plant was constructed for the manufacture of fine table cutlery which until now has been operated in conjunction with the manufacture of silver plated flatware. In 1914 the company was set off as a separate company with a capital stock of \$400,000.00. Products are distributed to hotel and restaurant jobbing trade, department stores and jewelers.

The present management of the company includes: Alexander Harper, President; Dean Welch, Vice President; George Merriman, Secretary and Assistant Treasurer; and J. J. Kaicher, Treasurer.

Middletown Silver Co.

Fathered by the Middletown Plate Co. before the Civil War and sold to the International Silver Co. around 1898, but never operated, the real Middletown Silver Co. came into being through the efforts of former Middletown Plate Co. workers, who organized the company in 1903. The never-working formula "everybody boss—nobody boss" soon placed the business squarely on the rocks in 1910 when it was taken over by the present management consisting of Minn S. Cornell, President; Joseph Merriam, Treasurer; and R. W. Merriam, Secretary. From 1910 when the company employed around 25 workmen producing silver plated Britannia hollowware, followed by a popular-priced line of silver plated nickel silver hollowware, until 1920 it had increased annual sales from \$52 thousand to \$365 thousand. In an attempt to further popularize high grade nickel silver hollowware the company has introduced within the past 160 days, a new line of popular priced hollowware mounted with nickel silver instead of Britannia metal.

Normally, the company employs around 50 persons in the production of a widely diversified line of silver plated hollowware which is sold through the company's own salesmen to jewelry stores and the higher grade department stores.

Taber & Tibbits

Like many other men now at the helm of manufacturing industry, R. H. Taber of Wallingford decided in 1919 to quit his job in another silverware plant—go in business for himself, the result being Taber & Co., incorporated April 22, 1919, to manufacture silverplated and pewter hollowware. In 1920 with the entry of Tibbits, former International executive, the company name was changed to Taber & Tibbits.

Within the past few years the production of pewter hollowware has been discontinued and Sheffield reproductions added. Distribution of Taber & Tibbits' products are made through the company's own salesmen to jewelry and department stores in the U. S. and Canada. Employment has at times reached a peak of slightly over 100 but the average range is between 40 and 60.

R. H. Taber is titular head of the company, being president and treasurer.

Acme Sterling Corp.

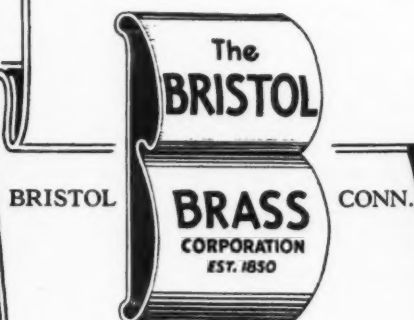
"To make money, of course; what other reason could a man have for going into business?" was the reply of Albert Lippman when asked by the writer to name the chief factor which led to the founding of his company in 1928. This quick rejoinder by Mr. Lippman, secretary and treasurer of the Acme Sterling Corp., is typical of the ready wit and business acumen of the one time accountant, who with the former silver spinner, A. W.

BRASS

SINCE 1850

UNEXCELLED

We Have "THE BRASS" To Shout



SHEETS and COILS
for forming, drawing,
blanking and high finishes

RODS — Stock shipments
Round, hexagon, square,
irregular shapes
Free turning, knurling, swag-
ing, forging, welding

WIRE — Processed specially
for tubular, split and common
rivets, also screws and springs

BRONZE—GILDING—LOW BRASS

We do no processing of parts

WRITE FOR CIRCULAR C. I.

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BRISTOL, CONN.

NEW YORK 15 Park Row { BRANCH OFFICES } BOSTON 683 Atlantic Ave.

NICKEL SILVER

SHEETS ROLLS

Phosphor Bronze
Bronze Gilding Metal
Low Brass
Special Alloys

WATERBURY

ROLLING MILLS, INC.
WATERBURY CONNECTICUT

SHEET COPPER

Roofing Copper	Tank Sheets
Cornice Sheets	Spinning and Drawing
Boiler Copper	Copper
Kalamaine Sheets	Tinned Sheets
Fire Extinguisher	Lead Coated Sheets
Copper	

**ROLD
COLD**
TRADE MARK

COPPER SHEETS

Smoother, flatter, more uniform in color,
texture and thickness

Made in all gauges, lengths and tempers up to
42 inches wide

THE
NEW HAVEN
COPPER COMPANY
SEYMOUR, CONN.

Established 1849

Sheet Copper Exclusively

Haas, as president, entered into the business of producing sterling hollowware exclusively in New York City in 1928. Attracted to the "Silver City" in December 1929, no doubt because of low rent and an adequate supply of skilled labor, this small concern has weathered the economic storm of the past four years "with all 30 hands on deck" for at least 46 weeks of every year—an exceptionally good record for a budding company in the highly competitive silverware field. Products are sold through the company's representatives chiefly to retail jewelers in U. S. and Hawaii.

Regal Silver Co.

Buying the assets of the defunct Hampton Roads Cutlery Co., of Norfolk, Va., in 1910, Mr. M. L. Baker and Mr. G. F. Hemming of New Haven formed a partnership in 1910 which was incorporated in 1911 as the Regal Silver Co., producing silver plated knives and forks, stainless steel and silver plated cutlery. In 1919 the company became entirely a family owned business when Mr. Baker purchased his partner's stock in the business, placed members of his family in all official posts.

According to the sincere belief of a company official, the Regal Silver Co. was one of the first organizations in the industry to use high speed dies and the first to tumble knives in barrels, now generally adopted by the entire cutlery industry. Mr. Baker missed a tidy annual license income when he found the tumbling process was not patentable. Nevertheless he realized a few thousand making 3 sizeable installations in other large plants, and by that time everyone had plumbed the depths of the new trade secret. Never large, the company at its height reached sales of its "flash" goods to Woolworth's and other similar class stores of around \$650 thousand annually in its big years—1925-1929.

Present line includes: Stainless steel 5%; silver plated cutlery 15%; remainder silver plated knives, forks and spoons.

Merwin-Wilson Co.

Founded in 1912 to make a general line of silver-plated ware as a result of the activities of the New Milford Board of Trade, the corporation then known as the Bennett-Merwin Silver Co., Inc., was originally incorporated by Marcus G. Merwin, C. A. Bennett and V. P. Staub.

To the initial line of flatware have been added, as the company's specialties, prize cups and trophies and Colonial reproductions in pewter, all of which move to consumers through retail jewelry channels. Present head of the company is L. W. Wilson, president.

BRASS AND COPPER

(Continued from page 26)

.001" in plain and tin coated surfaces. Although one of the smaller companies which has come into the field since competitive conditions have grown acute, it has nevertheless made progress from the start because it has consistently sought out and performed unusual services for many different lines of industry.

For instance, it has produced metal for dia-

phragms of all types of instruments, including many of those in instruments used by Lindbergh on his first trans-Atlantic flight. Its metals have likewise found their way into barometers, microphones, radio condenser tubes, lipstick and compact containers, container wrappers, pipe coverings for oil lines, etc. Most interesting of its products are the phosphor bronze saws which it produces to cut diamonds. Unlike other companies previously mentioned, it does not melt up its own metals, but rolls from a base size metal purchased from other companies.

Its present officers are J. L. Rigney, president; W. L. Cross, secretary and treasurer.

Waterbury Rolling Mills Company

This company, formed in 1906, specifically for the manufacture of sheet nickel silver, brought together three practical operating men who had had considerable experience in other nearby Waterbury mills. They were Frank P. Welton, now deceased, who acted as superintendent of casting shop; Abel Kenworthy, master mechanic; and Robert D. Somers, who became superintendent of the rolling mill and who is now president.

The company has an annual capacity of approximately 5,000,000 pounds in rolled nickel silver, phosphor bronze and other copper alloys.

Robert D. Somers, the only one of the three original incorporators still active is president; Samuel J. Wells, vice-president; and Fred B. Beardsley, secretary and treasurer.

Bridgeport Rolling Mills

The earlier history of this company, one of the smaller group is somewhat shrouded in mystery. Its predecessor, dubbed by the present management as a "war baby" was the Connecticut Alloyed Metals Company of Bridgeport which went into receivership immediately after the war, leaving a large supply of unused government metal on hand. Then came James McKay in 1919 to form the company in the belief that he could secure this government metal for practically nothing, but circumstances proved that the government was no Santa Claus. Mr. McKay then interested William R. Bull, investment broker of New York, but shortly afterwards Mr. George D. Stearns was placed in charge by Mr. Bull. Within a few months, Mr. McKay resigned. Mr. Stearns is now president of the company. Under his management the company has progressed from nothing to a lusty child of this industry.

Its products are rolled brass, copper and copper alloys, delivered in sheets, strips and coils.

The Stamford Rolling Mills Company

Because of the absence of the company's chief historian and the lack of time in which to make research, none of the early history of this company can be recorded in this article. It is known, however, that it has a production capacity of approximately 5,000,000 pounds of copper, brass and bronze in sheets and coils annually. Officials of the company are: Evans R. Dick, president; James O. McCue, general manager and vice-president; E. C. Potter, vice-president; A. M. Plyer, treasurer; and H. M. Sweetman, secretary. The plant is located at Springdale, Connecticut, a suburb of Stamford.

Somers Brass Company

Originally organized in 1916 by R. D., J. E. and L. J. Somers, it started first to roll thin gauge brass in South Waterbury, but later, due to lack of profit margin, specialized in rolling pure nickel into thin gauges which is used principally in radio tubes. It is believed to be the only company in Connecticut specializing in this product which requires extreme care in winding and wrapping in cardboard for shipment.

The company was changed to its present name in 1925. R. D. Somers, also president of the Waterbury Rolling Mills, is president; J. E. Somers, treasurer and L. J. Somers, secretary and assistant treasurer.

NEWS FORUM

(Continued from page 18)

To Investigate Arms Companies. Senator Pope, temporary chairman of the Senate Munitions Investigating Committee, has recently predicted that the books of munitions and war materials manufacturers in the United States will be audited by representatives of this special Senate committee, as well as to be called to Washington to explain the disposition of their products both in the United States and in foreign countries. The Connecticut companies scheduled to be called are: Winchester Repeating Arms Company, New Haven; Remington Arms Company, Bridgeport.

BRASS COPPER

NICKEL SILVER

PHOSPHOR BRONZE

**PLAIN OR TIN COATED
IN COILS**

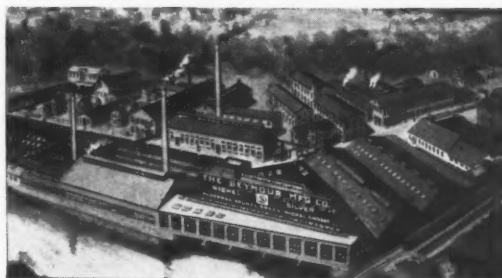
**THE THINSHEET METALS COMPANY
WATERBURY CONNECTICUT**

THE SEYMOUR MFG. CO.



FROM

**THIS HUMBLE BEGINNING IN
THE YEAR 1878**



TO

**A PRESENT ANNUAL CAPACITY OF
TWENTY-FIVE MILLION POUNDS OF**

**NICKEL SILVER
AND PHOSPHOR BRONZE**

SHEETS - WIRE - RODS

ALTHOUGH Nickel Silver and Phosphor Bronze have been commercially produced for several generations, their use has grown with such marked rapidity in recent years that fabricators quite frequently regard them as virtual problem solvers in the production of new items. Our engineering department is always at the disposal of Connecticut and all other manufacturers in the development of their products.

THE SEYMOUR MFG. CO., SEYMOUR, CONN.



FOR SERVICE

SERVICE SECTION

On account of space limitations, the material and used equipment items offered for sale by Association members have not been classified by sizes or usage best adapted. Full information will be given on receipt of inquiry. Listing service free to member concerns.

●● Materials for Sale

COLD rolled steel in coils and in squares, condulets and fittings, remnants of covering materials—velours, velvets, mohair, tapestries, denims, chintzes, and cretonnes, semi-finished and castellated U. S. S. nuts, pulleys, flat and crown face-steel and cast-iron; new shaft hangers, brass wire, brass rods, aluminum tubing, cold drawn steel—mostly hex; miscellaneous lot of material used in the manufacture of molded rubber parts and flooring, knife switches—new and many sizes; carload C. I. drop bases, No. 1025 steel in sizes 4' x 2' and 6' x 2'; lead pipe, lead sheet, acid proof pipe fittings, 124 bars screw stock varying thicknesses and lengths, white absorbent tissue process from cotton, rotary convertor, colors and dyes—large variety, lacquers—several hundred gallons in assorted colors; and soft anneal copper with high silver content in rolls. J. H. Williams wrenches in assorted sizes.

●● Equipment for Sale

ACCUMULATORS, annunciators, baskets, beaders, beamers, bearings, belt stretchers, blowers, boilers, braiders, bronze runners, cans, cards, woolen; car loaders, chain, chairs, champfer, clocks, time recorders; clock systems, colors and dyes, compressors, condulets, converters, conveyors, cookers, cooking utensils, doublers, draftsman's table, drop hammers, drops, board; drums, drying racks, dyes, engines, evaporators, extractors or percolators, fans, filtering carbon, folders, forming rolls, frames, furnaces, gears, generators, grinders, grindstones, grinding wheels, guiders, headers, lamp shades, lathes, lifters, looms, De Laski circular; machines, automatic; machines, calculating; machines, compressing; machines, dieing; machines, drilling; machines, fising; machines, filling; machines, folding; machines, knitting; machines, mercerizing; machines, milling; machines, pipe-cutting and threading; machines, pleating down; machines, riveting; machines, screw; machines, threading; machines, tongue and groove; machines, washing; mercerizer equipment; millers, mixers, mills, mills rubber; mixing rolls, motors, oil circuits; oven drawers, paints and lacquers; panels, planers, plungers, pointers, presses, proflers, pulley drives, pumps, reamers, receivers, rheostats, safe cabinets, saws, scales, screens, seamers, shapers, shears, spindles, spinning mules, steam tables, steam warmers, stitcher, 192 monitor corner box switches, tables, tanks, toilet equipment, trucks, ash can; tube closers; wire, wire screw and yarders.

●● For Sale or Rent

FOR SALE. Small plant in St. Johns, Quebec, Canada, with two main buildings of 4,680 square feet and 7,178 square feet respectively, and five other smaller buildings with a total floor space of 13,451 square feet. The plant is conveniently situated on a siding of the Canadian National Railway with tracks of the Canadian Pacific on the opposite side of the plant, but with no siding. Real estate holding is 6½ acres. Plant now owned by Connecticut manufacturer. For further details, Address S. E. 70.

FOR RENT: Private office or individual desk space with competent stenographic service is available in room 908, Corner of Park Avenue and 40th Street, New York City. This exceptional opportunity is presented by the Charles Parker Company of Meriden, Conn., because of having removed executive headquarters from its New York City office to Meriden. Address inquiries either to Rental Opportunity, CONNECTICUT INDUSTRY, or to Wm. Winthrop Wright, Vice-President, The Charles Parker Co., 101 Park Ave., New York.

FOR RENT—IN DEEP RIVER, CONN.: 45,000 square feet of manufacturing space, sprinklered and heated, with AC or DC Current available. Ideal living and labor conditions and within overnight distance of New York by truck or boat. Write Pratt, Read & Co., Deep River, Conn.

Call or write for many other listings for sale, rent or lease in Connecticut. If our listings do not meet your requirements a thorough search will be made. Address Service Section, *Connecticut Industry*.

FOR SALE: 1 Burroughs-Moon-Hopkins Billing Machine No. 7202-795298 with stand. 1 Burroughs Bookkeeping Machine No. 6-321849. 1 Lightning Coin Changer No. 10306. All in good condition. Inquire Wilcox, Crittenden & Co., Inc., Middletown.

WANTED TO SELL—LEATHER SCRAP. Connecticut manufacturer of loom supplies has constantly a large supply of leather scrap for sale. Address S. E. 75.

FOR SALE. One 3½ Bliss toggle press in good condition. Address S. E. 76.

FOR SALE—3-5 h.p. and an 8¼ h.p. Cleveland Worm Gear Reduction Units. Also 8 composition toggle presses. A few 30 x 3½ steam tables and 2-5 h.p. induction motors. Address S. E. 77.

●● Employment

PRODUCTION ENGINEER. Man with more than 15 years' experience in production work, covering the metal, textile and rubber industries, now desires to contact Connecticut or New England manufacturer who wishes a man capable of rendering practically all types of production service, including cost studies. Salary open. References exchanged. Address P. W. 263.

FACTORY EXECUTIVE. Man with broad experience in industrial production, sales and accounting, desires to secure a position with a Connecticut manufacturer where he will have the opportunity of advancement in income and position by showing results. Now employed. Address P. W. 265.

OFFICE EXECUTIVE. Man long experienced in office management, accounting as well as in factory production work seeks position of responsibility. Last position with large auto service organization. Excellent references. Address P. W. 266.

GRADUATE CHEMIST—TEACHER OF MATHEMATICS AND SCIENCE—ECONOMICS. Has done work on fats, oils, asphalts and bitumens, textiles and textile chemicals, impregnating treatments, rubber, water sewage, industrial wastes and inorganic analyses. Is willing to do anything. Age 41. Married and has a family. Address P. W. 267.

ELECTRICAL AND INDUSTRIAL ENGINEER. Young man, graduate M. I. T., B.S. and M.S. in electrical engineering. Experience in manufacturing and production research and development cost and time study, industrial engineering and plant layout. General Electric trained. Former chief engineer for Connecticut manufacturer. Considerable experience in research and development of new products of electrical or mechanical nature as well as purchasing and engineering sales. Excellent mechanical and electrical experience. Desires position as engineering or manufacturing executive; development or research engineer, plant engineer or purchasing. Excellent references. Address P. W. 268.

RECENT STATE COLLEGE GRADUATE. Young man, age 29, graduate of class of 1930 at Connecticut State College, and who has done temporary work for the Connecticut Agricultural Experiment Station, now seeks clerical position in industry or commerce because of lack of opportunity in the agricultural field. His general education and personality qualify him for a position of this kind. Salary requirements moderate. Address P. W. 269.

PRESIDENT AND TREASURER of a Connecticut corporation now liquidating is open to take active management of publicity, marketing, finance and personnel departments where administrative ability is required. Address P. W. 270.

PATENTS: United States patents, investigations, patent drawings. Walter S. Edwards, 655 Winthrop Ave., New Haven, Conn. Send card for appointment.

SERVICES AT YOUR DOOR

An alphabetical list of accessible services recommended to Connecticut Industry readers

**HADFIELD, ROTHWELL,
SOULE & COATES**
Certified Public Accountants
Hartford Stamford

HENRY KNUST
Certified Public Accountant
Conn. and N. Y.
15 Lewis Street Hartford

Scovell, Wellington & Co.
ACCOUNTANTS AND AUDITORS
First National Bank Bldg.
New Haven
Offices in Principal Cities

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24 hour service to Connecticut
Industries
New Haven — Bridgeport

ENGINEERS—MANAGEMENT
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First National Bank Bldg.
New Haven
Offices in Principal Cities

ENGINES & MOTORS
**WOLVERINE MOTOR
WORKS, INC.**
DIESEL ELECTRIC SETS
6 Union Ave. Bridgeport

ENGRAVERS
DOWD, WYLLIE & OLSON
*Advertising Art &
Photo Engraving*
106 Ann St. Hartford

FENCING
THE JOHN P. SMITH CO.
*Distributors for Page fence,
Manufacturers of Wire Cloth,*
497 State St. New Haven

FREIGHT FORWARDERS
**THE MILTON SNEDEKER
CORP.**
Foreign Freight Forwarders
44 Whitehall St., New York City

...Query

Readers desiring to purchase merchandise or services not listed here will be given the names of reliable firms upon inquiry to this department.

...Listing

Copy for listing in this department must be received by the 15th of the month for publication in the succeeding month's issue. We reserve the right to refuse any listing.

HEAT REGULATORS—
**Minneapolis-Honeywell Heat
Regulator Co., Inc.**
A regulator for every need
740 Capitol Ave. Hartford

HEAT TREATING
**The Stanley P. Rockwell
Company**
Heat Treating & Equipment
296 Homestead Ave. Hartford

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**AMERICAN MUTUAL
LIABILITY INS. CO.**
Workmen's Compensation Ins.
Boston - Bridgeport - Hartford

LEONARD'S GUIDE
*Freight, Express and Parcel Post
Rates and Routing*
*The most complete, accurate and
simple guide published*
15 East 26th St. New York

MILL SUPPLIES
THOMAS TRANT & BRO.
*Jobbers—Plumbing, Gas Heating,
Water Supplies and Specialists
in Mill Supplies*
228-232 State St. Hartford

PRINTERS
**THE CASE, LOCKWOOD &
BRAINARD CO.**
Printers and Binders
Trumbull St., Hartford

RECORDING INSTRUMENTS
THE BRISTOL COMPANY
*Recording and Controlling
Instruments*
Waterbury - Connecticut

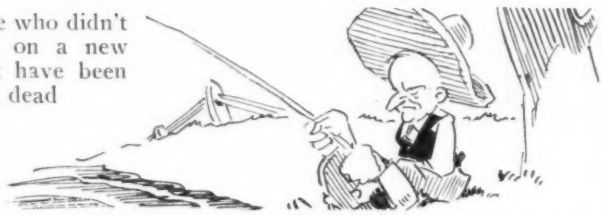
TRANSPORTATION
**AMERICAN-HAWAIIAN
STEAMSHIP CO.**
Coast-to-Coast Freight Service
New York — Boston

**DOLLAR STEAMSHIP LINES,
INC., LTD.**
*Inter-coastal—Far-East and
Mediterranean freight steamer
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New York Boston


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I WOULDN'T give a hang for a horse who didn't have enough sense to go cautious on a new waterin' place. If he hadn't he might have been laid up or dead long ago. Reckon a dead horse never was any good to anybody.



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